# ACADEMIC PROGRAMMES ORDINANCES & REGULATIONS

## Bachelor of Technology
## &
## Bachelor of Technology (Evening)

# 2017


**DELHI TECHNOLOGICAL UNIVERSITY**

(Estd. by Govt. of NCT of Delhi vide Act 6 of 2009)
Shahbad Daulatpur, Bawana Road, Delhi-110042
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# SECTION-A
## About University

**Initially Established with the name “Delhi Polytechnic”**

**In the year 1941 at Kashmere Gate Campus**

**In the year 1965 renamed as**

**Delhi College of Engineering**

**Reconstituted**

**Delhi Technological University in the year 2009**

**Vide Govt. of NCT of Delhi Act 6 of 2009**

**-A non-affiliating**

**TechnologicalUniversity**

**“Committed to**

**Foster Engineering Excellence**

**And**

**Scientism together”**

# Delhi Technological University
## *(Formerly Delhi College of Engineering)*
## (Estd. by the Government of NCT of Delhi vide Delhi Act 6 of 2009)

"Delhi Technological University is a non-affiliating teaching-cum-research University engaged in fostering excellence in education, research and innovations in engineering and technology, applied sciences and management"

The University is inspired by talent and driven by innovations and is firmly committed to provide industry relevant, socially responsible manpower to meet the challenges of 21st Century. The culture of research and innovations is vibrant in the DTU campus which inspires students from UG levels onwards to engage in cutting edge technology development and discover the value and worth of the knowledge acquired by them during their studies. With its illustrious history spanning over 75 years the institution is marching on the pathways of excellence and is one of the highly sought-after university for the inspired students community and faculty.

## Vision

To be a world class university through education, innovation and research for the service of humanity.

## Mission

1. To establish centres of excellence in emerging areas of science, engineering, technology, management and allied areas.
2. To foster an ecosystem for incubation, product development, transfer of technology and entrepreneurship.
3. To create environment of collaboration, experimentation, imagination and creativity.
4. To develop human potential with analytical abilities, ethics and integrity.
5. To provide environment friendly, reasonable and sustainable solutions for local & global needs.

“DTU as a Technological University will be a significant milestone to create an academic and research environment to foster scientism and engineering excellence together. The upgradation of DCE as a Tech University is seen as a major initiative of Government of Delhi to make Delhi as the Knowledge Capital of India.’’

## The Inspiration

The inspiration for reconstituting Delhi College of Engineering into a Technological University in the NCT of Delhi has been derived from the fact that in the new Knowledge Age creation and dissemination of knowledge, capabilities of utilizing knowledge to create quantum jump in quality, performance and service to industry and society and thus, creating a better tomorrow has to be the hallmark of science, engineering and technology education in India. Such an effort when encapsulated with the agile layers of scientific values, unclenching faith in research integrity and professional morality ensures growth, prosperity and happiness around the world. Such an academic environment, in fact, needs to be created in the temples of higher learning, especially in the University and Institutions imparting professional education. This necessitates the requisite academic and administrative autonomy. The autonomy here becomes the freedom to excel and the associated accountability ensures a much greater commitment and compliance to high academic standards. In the context of Technological University and Engineering Institutions, we need also to cause seamless integration of science and engineering so that we succeed in creating the power of science and the might of technology together in our institutional campuses.

Learning from the international experience it goes without saying that we need to establish future Universities in India where science and technology both could flourish together, adding strength to each other’s existence and contributing to the growth of interdisciplinary engineering in an environment of scientism.

What we really need to do is to create institutions and academic environment which attracts the very best talent towards science & engineering education and research both in the student community as well as in the faculty. For this we need to create the synergy between science and engineering to ensure that the very best talent is drawn

towards university campuses which gravitate with the excitement of science and the thrill and joy of engineering. The DTU is firmly committed to foster this vital synergy between science and engineering.

The National Capital for many decades has been the hub for quality education and research in its premier institutions and universities such as the IIT Delhi, AIIMS, Delhi University colleges including Delhi Technological University. Delhi for a long time has been also known for promotion of manufacturing and production activities in both medium and small scale sectors. It has witnessed during the last two decades a significant growth of IT and ITES industries in and around Delhi. This has caused a major shift in the emphasis on shifting the hard core engineering activity to soft sectors of the knowledge economy. We could have caused a much greater resurgence of the core engineering sector if along with human resource development, we could have undertaken technology incubation and product innovation in our institutions of higher learning.DTU as a teaching-cum-research university offers a unique opportunity to create an environment of synergetic partnership between academic and industry. DTU thus, aims to cause a major departure from the conventional system of education and research. It aspires to imbibe a culture of scientific research in its technology disciplines and technology temper it its scientific research and education. The university also aspires to provide the thrill of a corporate R&D environment with a planned focus on industrially relevant projects and technology incubation.

The human resource output of DTU shall impact the growth of future engineering and technology. It will revolutionize the basis of design, systems of manufacturing and give rise to development of new materials, next generation communication technologies, information highways and cyber networks, growth of clean energy and environment technologies and capabilities to manage technology, business and enterprises in the connected economy. In fact, the output of DTU is target to impact significantly the resurgence of the 3rd Industrial Revolution which is on the anvil given the convergence of IT and the fast developing opportunities for harnessing energy in plenty through renewable energy resources.

The research outputs of this university are of high value to India's socio-economic development and for the progress in industrially relevant science and technology. Strong linkages have been forged between teaching and research, university and industry, and university and research laboratories. Collaborative projects with industry and research institute are also a major focus area of the University.

The DTU is engaged in fostering a culture of excellence supported by qualified faculty and high quality student intake, including international students admitted through the NRI/ PIO/ Foreign Nationals quota. It has the necessary freedom and supportive layers of autonomy to nurture excellence in teaching and research. DTU is envisioned to be a pioneering institute having high productivity of quality scientific and technological human resource and brainware. We wish to benefit Industry in India from the quality of our graduate out turn and cost effective technology incubation and innovative product development. The DTU has focused its academic and research strategy on creating the *Panchamrit* of Academia, Industries, R&D organization, Government and Society, thus enhancing its reach as well as its share of contribution to national economy and playing its role as a partner in progress of the society.

## Our Glorious Past:

"76 years of Tradition of excellence in Engineering & Technology Education, Research and Innovations" DelhiCollege of Engineering, (initially established with the name – Delhi Polytechnic) came into existence in the year 1941 to cater the needs of Indian industries for trained technical manpower with practical experience and sound theoretical knowledge. The institution started its functioning at the historic Kashmere Gate campus as a follow up of the Wood and Abott Committee of 1938. It comprised of a multi disciplinary and multi level institution offering wide ranging programs in engineering, technology, art and sculpture, architecture, pharmacy and commerce. The national diploma awarded by the institution was recognized as equivalent to degree level for the purpose of employment. In 1952, the college was affiliated with University of Delhi and started formal Degree level programs. The department of Architecture later became the School of Planning and Architecture, now a Deemed University and

Institution of National importance. The department of Arts and Sculpture became College of Arts and the departments of Chemical Technology and Textile Technology were shifted out en-block to mark beginning of the IIT Delhi at its new campus at HauzKhas. The department of commerce was later abolished and the faculty of management studies of the University of Delhi was established by Prof. A Das Gupta, of DCE. Delhi College of Engineering is thus the mother institution of a number of national projects including IITD, SPA, College of Arts and even the famous FMS.

Till 1962, the college was under the direct control of Ministry of Education, Government of India. In 1963, the administration of the college was handed over to Delhi Administration. Delhi College of Engineering was under the administrative control of Department of Training& Technical Education, Govt. of NCT of Delhi. For academic purpose, the college was affiliated to University of Delhi since 1952. From July 2009, the DCE has become Delhi Technological University vide Delhi Act 6 of 2009.

The erstwhile DCE has functioned from its historic Kashmere Gate Campus for almost 55 years and has shifted in 1996 to its lush green sprawling campus of 164 Acres at Bawana Road, adjoining Sector-17, Rohini, Delhi. Its shifting to new campus has added the dimension of research and caused innovations in plenty, which has received high national and international acclaim. As a Delhi Technological University it has the desired autonomy to excel and shape itself as a world class Technological University.

# SECTION-B

## B. Tech.Ordinances & Regulations
## (ORDINANCE 1-A)

# DELHI TECHNOLOGICAL UNIVERSITY
## Ordinance (1A)

*(For batches 2015-16 and onwards)*

## Preamble

There are following 13 Academic Departments in the University. The University offers 14 B.Tech. program of four years duration, 4 B.Tech. (Evening) programs of four years duration, 22 M.Tech programs of two years durations, Master of Business Administration programs of two year duration, Master of Business Administration (Executive) and PhD programs in various Engineering, Science and Management disciplines. From AY 2017-18 at its East Campus University is starting BA (Eco), Bachelor of Business Administration and Master of Business Administration.

**Academic Departments**

| Sr. No. | Name of Department | Code | Sr. No. | Name of Department | Code |
|---|---|---|---|---|---|
| 1 | Applied Physics | AP | 8 | Electronics & Communication Engineering | EC |
| 2 | Applied Chemistry | AC | 9 | Environmental Engineering | EN |
| 3 | Applied Mathematics | MA | 10 | Humanities | HU |
| 4 | Biotechnology | BT | 11 | Information Technology | IT |
| 5 | Civil Engineering | CE | 12 | Mechanical Engineering | ME |
| 6 | Computer Science & Engineering | CO | 13 | Delhi School of Management | MG |
| 7 | Electrical Engineering | EE | | | |

The Academic Departments offer courses to the students of various disciplines. Academic curricula are so devised that a student of one discipline can take some courses of other disciplines offering choice based credit system (CBCS). Such flexibility helps a student to develop his core competence together with the interdisciplinary skills in the area of his/her interest.

## Programs

The main aim of education at DTU is to enable students to face the wide-ranging changes taking place in the fields of technology, environment and management with confidence. This includes undertaking design, development, construction, production, managerial and entrepreneurial activities, and higher studies in their chosen or allied interdisciplinary fields of study.

The University lays great emphasis on assisting students in the development of character on self-confidence with management traits. To achieve these goals the curriculum lays more stress on learning and less on teaching. Efforts are made to encourage self-learning, creative thinking, critical evaluation, spirit of inquiry and imbibing the culture of lifelong learning.

The University offers following under graduate programs (Table-1(A) and (B)) leading to Bachelor of Technology degree in different disciplines.

**Table-1(A) UG Programs for 2015 and 2016 batches**

| S. No. | Academic Program | Code | Duration (Years) | Department |
|---|---|---|---|---|
| 1. | B. Tech. (Biotechnology) | BT | 4 | Biotechnology |
| 2. | B. Tech. (Civil Engineering) | CE | 4 | Civil Engineering |
| 3. | B. Tech. (Computer Science &Engineering) | CO | 4 | Computer Science & Engineering |
| 4. | B. Tech. (Electrical Engineering) | EE | 4 | Electrical Engineering |
| 5. | B. Tech. (Electrical and Electronics Engineering) | EL | 4 | Electrical Engineering |
| 6. | B. Tech. (Electronics & Communication Engineering) | EC | 4 | Electronics & Communication Engineering |
| 7. | B. Tech. (Environmental Engineering) | EN | 4 | Environmental Engineering |
| 8. | B. Tech. (Engineering Physics) | EP | 4 | Applied Physics |

| S. No. | Academic Program | Code | Duration (Years) | Department |
|---|---|---|---|---|
| 9. | B. Tech. (Information Technology) | IT | 4 | Computer Science and Engineering |
| 10. | B. Tech. (Mechanical Engineering) | ME | 4 | Mechanical Engineering |
| 11. | B. Tech. (Mechanical Engineering with Specialization in Automotive Engineering) | AE | 4 | Mechanical Engineering |
| 12. | B. Tech. (Mathematics and Computing) | MC | 4 | Applied Mathematics |
| 13. | B. Tech. (Production and Industrial Engineering) | PE | 4 | Mechanical Engineering |
| 14. | B. Tech. (Polymer Science and Technology) | PT | 4 | Applied Chemistry |
| 15. | B. Tech. (Software Engineering) | SE | 4 | Computer Science and Engineering |

**Table-1(B) UG Programs for batches 2017 onwards**

| S. No. | Academic Program | Code | Duration (Years) | Department |
|---|---|---|---|---|
| 1. | B. Tech. (Biotechnology) | BT | 4 | Biotechnology |
| 2. | B. Tech. (Civil Engineering) | CE | 4 | Civil Engineering |
| 3. | B. Tech. (Computer Science & Engineering) | CO | 4 | Computer Science & Engineering |
| 4. | B. Tech. (Electrical Engineering) | EE | 4 | Electrical Engineering |
| 5. | B. Tech. (Electronics & Communication Engineering) | EC | 4 | Electronics & Communication Engineering |
| 6. | B. Tech. (Environmental Engineering) | EN | 4 | Environmental Engineering |
| 7. | B. Tech. (Engineering Physics) | EP | 4 | Applied Physics |
| 8. | B. Tech. (Information Technology) | IT | 4 | Information Technology |

| S. No. | Academic Program | Code | Duration (Years) | Department |
|---|---|---|---|---|
| 9. | B. Tech. (Mechanical Engineering) | ME | 4 | Mechanical Engineering |
| 10. | B. Tech. (Mechanical Engineering with specialization in Automotive Engineering) | AE | 4 | Mechanical Engineering |
| 11. | B. Tech. (Mathematics and Computing) | MC | 4 | Applied Mathematics |
| 12. | B. Tech. (Production and Industrial Engineering) | PE | 4 | Mechanical Engineering |
| 13. | B. Tech. (Polymer Science and Technology) | PT | 4 | Applied Chemistry |
| 14. | B. Tech. (Software Engineering) | SE | 4 | Computer Science & Engineering |

**Structure of Undergraduate programs**

The four year B. Tech. programs compromise of courses divided in six distinct areas, namely: Departmental Core (DCC), Departmental Elective (DEC), Allied Engineering (AEC), Applied Sciences and Mathematics (ASC), Humanities, Social Sciences and Management (HMC) and Open Electives(OEC). All the courses offered in first year B. Tech. programs are categorized as '**Common Courses**' for all the academic programs.

Credits assigned to various components of the B. Tech curriculum are given in Table-2. Credit and curricular components for common courses are given in the Table – 3.

**Common Courses**

The courses offered to the first Year B. Tech. programs are grouped under this category. All the students need to complete these common courses in First year. These courses have been divided into two groups namely Group-A and Group-B. Different departments have participated in design of these courses so as to cater to the requirement of their program(s) with the parent departments. These courses

are planned to give the students a firm base in the areas of Applied Science, Applied Mathematics, Humanities and Allied Engineering disciplines. These courses are presented in Table-3.

**Table-2 Credits of different curricular components**

| CURRICULAR COMPONENTS | | Credits |
|---|---|---|
| **(a)** | **Common Courses (First Year)** | |
| i. | Humanities, Social Sciences and Management (HMC) | 03 |
| ii. | Applied Sciences and Mathematics (ASC) | 20 |
| iii. | Allied Engineering (AEC) | 19 |
| | **Total** | **42** |
| **(b)** | **Departmental Core Courses (DCC)** | |
| i. | Core Courses | 60-64 |
| ii. | Engineering Analysis and Design | 04 |
| iii. | B. Tech. Project | 12 |
| iv. | Industrial Training | 02 |
| | **Total** | **78-82** |
| **(c)** | **Humanities, Social Sciences and Management Courses (HMC) (*other than Common Courses*)** | |
| i. | Humanities and Social Sciences | 05 |
| ii. | Management Studies | 03 |
| iii. | Professional Ethics and Human Values | 02 |
| | Total | **10** |
| **(d)** | **Allied Engineering Courses (AEC)** | **08** |
| **(e)** | **Open Elective Course (OEC)/ Departmental Elective Courses (DEC)/Generic Elective Courses (GEC)** | **35-31** |
| | **Grand Total** | **173** |

## Table-3 Common Courses for B. Tech. Programs

### First Year 1st Semester

| S. No. | Course Title | Subject Area | Credit | Contact Hrs/Week | | | |
|---|---|---|---|---|---|---|---|
| | | | | L | T | P | Total |
| **Group A** | | | | | | | |
| 1 | Mathematics – I | ASC | 4 | 3 | 1 | 0 | 4 |
| 2 | Physics – I | ASC | 4 | 3 | 0 | 2 | 5 |
| 3 | Chemistry | ASC | 4 | 3 | 0 | 2 | 5 |
| 4 | Basic Mechanical Engineering | AEC | 4 | 4 | 0 | 0 | 4 |
| 5 | Workshop Practice | AEC | 2 | 0 | 0 | 3 | 3 |
| 6 | Communication Skills | HMC | 3 | 3 | 0 | 0 | 3 |
| | **Total** | | **21** | 16 | 1 | 7 | **24** |
| **Group B** | | | | | | | |
| 1 | Mathematics – I | ASC | 4 | 3 | 1 | 0 | 4 |
| 2 | Physics – I | ASC | 4 | 3 | 0 | 2 | 5 |
| 3 | Basic Electrical Engineering | AEC | 4 | 3 | 0 | 2 | 5 |
| 4 | Programming Fundamentals | AEC | 4 | 3 | 0 | 2 | 5 |
| 5 | Engineering Graphics | AEC | 2 | 0 | 0 | 3 | 3 |
| 6 | Introduction to Environmental Science | AEC | 3 | 3 | 0 | 0 | 3 |
| | **Total** | | **21** | 16 | 1 | 9 | **25** |

**First Year 2nd Semester**

| S. No. | Course Title | Subject Area | Credit | Contact Hours/Week | | | |
|---|---|---|---|---|---|---|---|
| | | | | L | T | P | Total |
| **Group A** | | | | | | | |
| 1 | Mathematics – II | ASC | 4 | 3 | 1 | 0 | 4 |
| 2 | Physics – II | ASC | 4 | 3 | 0 | 2 | 5 |
| 3 | Basic Electrical Engineering | AEC | 4 | 3 | 0 | 2 | 5 |
| 4 | Programming Fundamentals | AEC | 4 | 3 | 0 | 2 | 5 |
| 5 | Engineering Graphics | AEC | 2 | 0 | 0 | 3 | 3 |
| 6 | Introduction to Environmental Science | AEC | 3 | 3 | 0 | 0 | 3 |
| | **Total** | | **21** | 16 | 1 | 9 | **25** |
| **Group B** | | | | | | | |
| 1 | Mathematics –II | ASC | 4 | 3 | 1 | 0 | 4 |
| 2 | Physics – II | ASC | 4 | 3 | 0 | 2 | 5 |
| 3 | Chemistry | ASC | 4 | 3 | 0 | 2 | 5 |
| 4 | Basic Mechanical Engineering | AEC | 4 | 4 | 0 | 0 | 4 |
| 5 | Workshop Practice | AEC | 2 | 0 | 0 | 3 | 3 |
| 6 | Communication Skills | HMC | 3 | 3 | 0 | 0 | 3 |
| | **Total** | | **21** | 16 | 1 | 7 | **24** |

**Departmental Core Courses (DCC)**

The departmental core consists of courses considered essential for a chosen engineering/science discipline including, engineering design, seminar, industrial training and project.

**Elective Courses**

The students are required to complete a specific number of elective courses. Every department offers a wide variety of elective courses to students providing them

opportunity to discover their academic interest and enhancing their engagement in learning process.The elective courses are categorized as Departmental Elective Courses (DEC), Generic Elective Courses (GEC), and Open Elective Courses (OEC). A student will be allowed to take **upto two courses (8 credits) in DEC/GEC/OEC category in online/offline mode** from any other Institute/University with prior approval of BOS of the respective Department.

**Open Elective Courses (OEC)**

The Open Electives are the 3 credit courses offered by different academic departments to the students of all disciplines.

**Departmental Elective Courses (DEC)**

A wide range of elective courses is available with each program. When a student opts elective courses offered in his/her program it will be termed as DEC.

**Generic Elective Courses (GEC)**

When a student of a particular branch opts for a DEC or DCC being offered in other branches these electives will be termed as Generic elective (GEC) for him/her.

**Humanities, Social Sciences and Management Courses (HMC)**

The Humanities, Social Sciences and Management Coursesconsist of courses considered essential for a B.Tech. program to inculcate the essence of technical writing, communication skills, economics and analysis, management and professional ethics & human values.

**Applied Sciences and Mathematics Courses (ASC)**

The Applied Sciences and Mathematics Courses consist of courses considered essential for a B.Tech. program to build the foundation for learning of engineering core courses.

### Allied Engineering Courses (AEC)

The students are required to complete a minimum number of number of Allied engineering courses (majority of them taught as common courses) offered by engineering departments other than his/her parent department. These courses expose the student with wide spectrum knowledge of allied engineering domain connected to the main engineering stream of the course of study of the students of concerned departments.

### Course Coding

A course is identified by a course code designated by a string of alpha-numeric characters and a course title. In a course code, first two letters of the string indicate the Academic Department/Program code offering the course and the last three numbers designate particular course.

### Course Number

For all the courses, the first digit corresponds to the level (year) at which a course is normally offered. The last two digits denote the number of the course, which will usually be odd for courses offered in the Odd Semester and even for courses in the Even Semester. For example, the course, “Network Analysis and Synthesis”, offered to Electrical Engineering students in second year ‘Odd Semester’ is numbered as EE201.

## Abbreviations and Notations

### Credits: Cr

### Teaching Engagements

Every course maintains a teaching schedule for which weekly contact hours are decided for delivering lectures (L), engaging tutorials (T) and/or performing practicals(P) to make learning in a course more effective. In the syllabi, the information regarding number of course credits and contact hours per week is denoted as: **Credits (L – T – P); 4 (3 – 1–0)**

## Weights for Course Evaluation

Evaluation in every course is based on the weights assigned to various components of the course curriculum. These components are designated as under:

| | |
|---|---|
| CWS | Class Work Sessional |
| MTE | Mid Term Examination |
| PRE | Practical Examination |
| PRS | Practical Sessional |
| ETE | End Term Examination |

In general, the relative weights assigned to different components of the entire course are as given below:

| S. No. | Course Type | | | Examination | | Relative Weights | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | L | T | P | TH | PR | CWS | PRS | MTE | ETE | PRE |
| 1. | 2 | 0 | 0 | Yes | -- | 25 | -- | 25 | 50 | -- |
| 2. | 3 | 0 | 0 | Yes | -- | 25 | -- | 25 | 50 | -- |
| 3. | 4 | 0 | 0 | Yes | -- | 25 | -- | 25 | 50 | -- |
| 4. | 3 | 1 | 0 | Yes | -- | 25 | -- | 25 | 50 | -- |
| 5. | 3 | 0 | 2 | Yes | No | 15 | 25 | 20 | 40 | -- |
| 6. | 3 | 0 | 2 | Yes | No | 15 | 15 | 30 | 40 | -- |
| 7. | 2 | 1 | 2 | Yes | No | 15 | 25 | 20 | 40 | -- |
| 8. | 2 | 1 | 2 | Yes | No | 15 | 15 | 30 | 40 | -- |
| 9. | 0 | 0 | 3 | -- | Yes | -- | 25 | 25 | -- | 50 |
| 10. | 0 | 0 | 6 | -- | Yes | -- | 50 | -- | -- | 50 |

Some examples are given below **'MA-101: Mathematics-I** refers to a course offered by the Department of Applied mathematics to the students of first year of the B. Tech. programs and is offered in the Odd semester and **AP-102: Physics-II** refers to a course offered by the Department of Applied Physics to the students of first year of the B. Tech. programs and is offered in the even semester.

| S. No. | Teaching Scheme | | Subject Area | Credits | Contact Hours/ Week | | | Exam Duration (HR) | | Relative Weights | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Subject Code | Course Title | | | L | T | P | TH | P | CWS | PRS | MTE | ETE | PRE |
| 1. | MA101 | Mathematics-I | ASC | 4 | 3 | 1 | 0 | 3 | 0 | 25 | -- | 25 | 50 | -- |
| 2. | AP102 | Physics -II | ASC | 4 | 3 | 0 | 2 | 3 | -- | 15 | 15 | 30 | 40 | -- |

**Credit System**

The University follows a modern method of continuous evaluation, which is prevalent in most of the professional institutions nationally and internationally, through a credit system in all its programs. The system offers flexibility to progress at a pace commensurate with the capabilities of a student to minimum credit requirements. The award system follows letter grades on a 10-point scale, where the performance is measured in terms of weighted grade point averages (SGPA and CGPA). A student has to satisfy minimum CGPA and earned credit requirements to be eligible for the award of degree (Table-2).

## Ordinance 1(A), 2015

**1. Short title and Commencement:**

(i) This ordinance shall be called the Ordinance 1(A), 2015 meantfor the four-year undergraduate Bachelor of Technology degree program of Delhi Technological University for batches 2015 onwards.

(ii) This ordinance shall come into force with effect from 01.08.2015.

**2. Definitions:**

(i) "**Applicant"** shall mean an individual who applies for admission to any undergraduate (UG) B. Tech. program of the University.

(ii) **"Academic Centre"** means centre established in the University for running the academic and research activities.

(iii) **"AC" and "Council"** shall mean the Academic Council of the Delhi Technological University.

(iv) **"Academic Program"** includes a program of courses or any other component leading to a Bachelor of Technology degree.

(v) **"BoM"** shall mean the Board of Management of the University.

(vi) **"BoS"** means Board of Studies of the concerned Department.

(vii) **"CGPA"** shall mean the Cumulative Grade Point Average.

(viii) **"Coordination Committee"** shall mean the committee of the faculty members involved in a course.

(ix) **"COE"** means Controller of Examinations of the University.

(x) **"Course"** shall mean a curriculum component of the academic program identified by a designated code number, a title and specific credit assigned to it.

(xi) **"Course Coordinator"** shall mean a faculty member who shall have full responsibility for the course; coordinating the work of faculty member(s) involved in that course, including examinations and the award of grades.

(xii) **"DA-UG"** shall mean the Dean Academic (UG).

(xiii) **"Degree"** shall mean the Bachelor of Technology degree viz. B. Tech. degree of the University as may be approved by the BoM from time to time.

(xiv) **"DOSW"** shall mean the Dean of Students Welfare.

(xv) **"Faculty Advisor"** shall mean a teacher nominated by the Department to advise a student on the courses to be taken by him/her and other matters related to the academic program.

(xvi) **"Grade Moderation Committee"** shall mean the committee appointed by the Board of Studies to moderate grades awarded by the Course Coordinators in different courses in a semester at a given level of a curriculum.

(xvii) **"JEE"** shall mean the Joint Entrance Examination (Main) for admission to undergraduate (B. Tech..) program of Delhi Technological University.

(xviii) **"NRI Student"** shall mean the student who is admitted against NRI/PIO/FN category.

(xix) **"OBC"** shall mean the other backward classes as notified by the Government of India/Government of NCT of Delhi from time to time.

(xx) **"PD"** shall mean the persons with disability as specified by the Government of India from time to time.

(xxi) **"Registration"** means registration for course or semester at the start of the semester of any program of the University.

(xxii) **"SC/ST"** shall mean the Scheduled Castes and Scheduled Tribes as notified by the Government of India/Government of NCT of Delhi from time to time.

(xxiii) **"Scheme of Teaching and Examination"** shall mean the scheme of teaching and examination for a branch of study as approved by the BoM.

(xxiv) **"SGPA"** shall mean the Semester Grade Point Average.

(xxv) **"Student"** shall mean a student registered for an undergraduate program for full-time study leading to the Bachelor of Technology degree.

(xxvi) **"UG"** shall mean the Under Graduate.

(xxvii) **"UG Program"** shall mean a program of courses and/or any other component leading to the Bachelor of Technology degree in a specified discipline/branch.

(xxviii) **"University"** shall mean the Delhi Technological University.

(xxix) **"UTTC"** shall mean University Time Table Committee.

***Note :*** *'He', 'Him' and 'His' implies 'he/she', 'Him / Her' and 'his/her', respectively.*

**3. Ordinance:**

(i) The University shall offer such UG program and of such minimum duration as the BoM may approve on the recommendation of the AC either on its own or on the initiative of a Department/ Academic Centre, and/or on the direction of the BoM.

(ii) The procedure for starting a new B. Tech. program, temporarily suspending a program or phasing out a program shall be such, as may be laid down in the Regulations.

(iii) The minimum entry qualifications and the policy and procedure of admission to UG program shall be such as may be approved by the AC and BoM.

(iv) A UG student shall be required to earn a minimum number of credits through various curricular components like teaching/laboratory courses, seminar, industrial training, project etc. at the University or at such other institutions as have been approved by the University.

(v) A UG student shall be required to complete all the requirements for the award of the Bachelor of Technology degree within such period as may be specified in the Regulations.

(vi) The date of initial registration for the UG program shall normally be the date on which the student formally registers for the first time. This date shall be construed as the date of joining the program for all intents and purposes.

(vii) A UG student shall be required normally to attend every lecture, tutorial and laboratory class. However, for late registration, sickness or other such exigencies, absence may be allowed as provided for in the Regulations.

(viii) A UG student may be granted such scholarship/ studentship/ assistantship/ stipend, etc. and awarded such prizes and medals as may be specified in the Regulations in accordance with the directions of the Government of India/Government of NCT of Delhi and/or the decision of the AC/BoM.

(ix) The procedure for the withdrawal from a UG program, rejoining the program, the award of grades and the SGPA/CGPA in the examination and all such matters as may be connected with the running of a program shall be such as may be specified in the Regulations.

(x) The award of the Bachelor of Technology degree to an eligible student shall be made in accordance with the procedure laid down in the Regulations.

(xi) Notwithstanding anything contained in the above Ordinance, no Regulations shall be made in contravention of the decision of the AC/BoM in regard to the duration of the program and the number of studentships and the procedure of admission and the percentage of students of various categories, viz. reserved (SC, ST, OBC, PD, NRI, FN, PIO) and unreserved categories. The Regulations for the Bachelor of Technology program can be modified / amended from time to time and the same shall be approved by the AC and the BoM.

(xii) In special circumstances, the Chairman of the BoM may, on behalf of the BoM, approve amendment, modification, insertion or deletion of an ordinance(s), which in his opinion is necessary or expedient for the smooth running of a program, provided that all such changes shall be reported to the BoM in its next meeting for ratification.

# REGULATIONS

**R.1 Short Title and Commencement:**

(i) These Regulations shall be called the Regulations, 2015 for the four-year undergraduate Bachelor of Technology program of the Delhi Technological University.

(ii) These Regulations shall come into force with effect from 01.08.2015.

**R.2 Undergraduate Programs:**

(i) The University may offer such undergraduate programs leading to Bachelor of Technology i.e. B. Tech. degree(s) as may be approved by the AC and the BoM.

(ii) The list of currently offered UG programs and the broad course structure are given in ***Table-1 and Annexure-A***. The structure of a program may be amended/ modified in accordance with the decision of the AC/ BoM.

(iii) The duration of UG programs leading to degrees of B. Tech. is normally four years. However, the maximum duration for the UG program for the degree of B. Tech. is seven years from the date of initial registration. The maximum duration of the program includes the period of withdrawal, absence and different kinds of leaves permissible to a student, but it shall exclude the period of rustication. The duration for the UG program may be altered in accordance with the decision of the AC/ BoM.

**R.3 Board of Studies (BoS):**

The Board of Studies (BoS) shall be a sub-committee of the AC, which shall consider all the academic matters related with the Department. It shall also consider and recommend to the AC the broad framework and policies related to the UG programs offered by the University. The composition of BoS of the department shall be as follows:- Head of the Department (Chairman), all Professors of the department (Members), two Experts appointed by the Vice Chancellor (Members) and two Associate Professors of the department by rotation (Members) for a period of two years.

**R.4 Phasing out of a Program:**

The phasing out of any UG program may be considered by the AC on the recommendation of the BoS. Also, a program may be phased out by the AC if, consecutively for three years, the number of students registering for the program is less than 40% of the sanctioned intake of the students.

**R.5 Starting a New Program:**

(i) The BoM may approve the starting of a new program or a modified program in lieu of the old phased-out program on the recommendation of the BoS and the AC.

(ii) A new program may be considered and recommended by the AC to the BoM for its consideration and approval. Such a proposal will be initiated by a Department through its BoS.

**R.6 Semester System:**

(i) The academic programs in the University shall be based on semester system; Odd and Even semesters in a year with winter and summer vacations. A number of courses shall be offered in each semester.

(ii) Each course shall have a certain number of credits assigned to it depending upon the academic load of the course assessed on the basis of weekly contact hours of lecture, tutorial and laboratory classes, assignments or field study or self study.

(iii) The courses offered in a semester shall be continuously assessed and evaluated to judge the performance of a student.

**R.7 Admissions:**

(i) Admission to all Under Graduate Programs shall be made through the JEE (Main). The policy of admissions, the eligibility thereof and other issues pertaining to JEE shall be such as may be approved by AC/BoM.

(ii) NRI/PIO/Foreign national either residing in India or abroad may be admitted to

any UG program in accordance with the policy guidelines laid down by the AC/ BoM.

**R.8 Allotment of Branch Program and its Change:**

(i) The allotment of branch to a student shall be made at the time of counselling on the basis of merit in JEE (Mains) and according to the preference of the student and the availability of seats.

(ii) Final up-gradation of branches will be done on the basis of fresh choices filled by the student at the end of first year.

**R.9 Academic Registration:**

(i) Every student shall be required to register in each semester on the scheduled date as per academic calendar of the University till the completion of the degree. If the student does not register on scheduled date he/she has to pay late registration fee notified from time to time upto a maximum of 10 working days. Registration in absentia may be permitted by the Dean Academic (UG). In absentia registration may be allowed only in rare cases such as illness or any other contingencies, at the discretion of the Dean Academic (UG).

(ii) In case, a student is proceeding on industrial training/internship, late registration may be allowed only up to a maximum of 10 working days after the scheduled registration date without late registration fee by the Dean Academic (UG).

**R.10 Chairperson, UTTC:**

(i) All the Time Table related work of First Year courses shall be looked after by the Chairperson, University Time Table Committee.

(ii) The Chairperson, University Time Table Committee shall assign the time slots for the 1$^{st}$ year courses and will allot lecture halls/ tutorial rooms for 1$^{st}$ year students. The Chairperson, UTTC shall be required to seek the details of subject teachers from the concerned academic departments and prepare the 1$^{st}$ year time table accordingly. The time table will be displayed on the student's notice board/ DTU

website for the information of students. This task shall be completed at least one week before the commencement of semester.

**R.11 Course Registration:**

(i) Every student shall be required to register for the courses that he/she wants to study for earning credits and his/her name will appear in the roll list of each of these courses. No credit shall be given if a student attended a course of which he or she has not registered. The performance of a student in all the courses, for which he/she has registered, shall be included in his/her grade card(s).

(ii) Student should first register for the courses in which he/she has been declared failed in the previous year/semester and then register for the remaining courses of the semester to make up the total required credits for that semester. However, a student shall not be allowed to register for the courses offered to students of third year, if he/she has not cleared all the courses of first year and a student shall not be allowed to register for the courses offered to students of fourth year, if he/she has not cleared all the courses of second year.

(iii) Those students who are joining the first year of the UG program shall complete the registration procedure on a specified registration date as per academic calendar/schedule notified from time to time.

(iv) A student may normally register for a minimum of 16 credits and a maximum of 32 credits. In case the student is not allowed to register the courses of current semester due to backlog of course(s) of previous year(s), he/she may register for credits less than 16 depending on number of backlog of course(s) of previous year(s).

(v) A student shall have the option to add or delete courses from his/her registration during the first ten days of the semester as per Academic Calendar.

**R.12 Program Advisor:**

A Program Advisor shall be appointed by the Head of the Department for each program who will advise the students for registration.

**R.13 Course Coordinator:**

Every course/subject offered by a Department shall be coordinated by a Course Coordinator appointed by the Head of the Department. The Course Coordinator shall have full responsibility for the course. He/she shall coordinate the work of other faculty members involved in that course in respect of their participation in various activities related to the course including continuous evaluation of the students through tests, quizzes, assignments, mid-term and end-term examination and the award of the grades.

**R.14 Minimum Number of Students Required for an Elective Course:**

An elective course in a Department shall run only if a minimum of 20 numbers of students register for it in a semester. However, the minimum number of students may be 15 in case the strength of the batch of students in the particular department depletes below 40. Similarly an Open Elective Course shall run only for a minimum number of 60 students.

**R.15 Course Code:**

Each course offered by the University shall be identified by a course code, normally consisting of a string of five alpha-numeric characters followed by a course title. The first two characters in a course code shall be capital letters identifying the responsible Academic Department offering the course. The next three characters are numerical digits: the first one normally specified the year of study and the last two digits specify the course number and the semester in which the course shall be offered. Normally odd number in the course code will indicate that the course will be offered in the odd-semester and the even number will indicate that the course will be offered in the even-semester of the year. For all the UG programs normally, 100 series shall be for the courses in first year 200 for the courses in the second year and so on.

**R.16 Course Credits:**

Each course shall have an integer number of credits, which reflects its weight. The number of credits of a course in a semester shall ordinarily be calculated as under:

(i) **Lectures/Tutorial:** One lecture hour per week shall normally be assigned one credit. One hour of tutorial per week shall be assigned one credit. However, the credits may be adjusted further by taking into consideration the quantum of work required to be put in by a student for learning the course having two/three hours of contact every alternate week shall have one credit only.

(ii) **Practicals:** One laboratory hour per week shall normally be assigned half a credit. Not more than three credits may be assigned to a practical course having only laboratory component. The courses having two/three hours of contact every alternate week shall have one credit only.

**R.17 Course Evaluation:**

(i) A student shall be evaluated for his/her academic performance in a course through tutorials, practicals, home work, assignments, term papers, field work/ industrial training, seminars, quizzes as Class Work Sessionals (CWS) and Practical Sessional (PRS), Mid-Term Examination (MTE), End-Term Examination (ETE) and Practical Examination (PRE) as applicable according to the guidelines formulated by the AC.

(ii) The distribution of weights for each component shall be announced by the course Coordinator at the beginning of the course, subject to such stipulations as are given in the Scheme of Teaching and Examination for a given program.

(iii) The criteria for continuous evaluation of any subject be declared in the very first week of commencement of the classes.

(iv) Answer sheets of the test(s) and examination(s) cannot be written in pencil.

(v) Evaluation of Answer sheet(s) should not be in pencil.

(vi) A student can go through his/her answer sheet(s) of MTE and the ETE and point out any discrepancy in its evaluation on a day fixed by the Course Coordinator/ Chairman, Grade Moderation Committee. Objections will be entertained right then, and not even on the next day.

(vii) Head of Departments will ensure that end term examination answer sheets are shown to the students before the day of moderation, on a date to be specified and

prominently displayed by the respective teachers. Further, the answer sheets be preserved by the Examination Branch for six months, before handing over to departmental stock for disposal.

(viii) The answer sheets of the End-Term Examination shall not be shown to a student after finalization of the grades by the Grade Moderation Committee.

(ix) The industrial/field training shall normally be evaluated through the quality of work carried out, the report submission and presentation(s) but the project shall be evaluated normally by Mid-Term seminar(s), quality of work carried out, project report submitted and the viva-voce examination.

**R.18 Conduction of Examination:**

(i) Each faculty member shall prepare and type/set his/her question paper for Mid-Term and End-Term Examinations after their recommendation by BoS of the concerned department and appointed by the Vice Chancellor. The typed soft copy shall be handed over to In-charge of the Examination Cell. After the question paper is formatted the same will be scrutinized by the paper setter for corrections. The Examination Cell shall prepare the sufficient number of copies of the paper and the In-charge of the Examination Cell shall deliver to the Superintendent of Examinations in sealed envelope 45 minutes prior to conduct of the particular examination.

(ii) Mid-Term Examination will be conducted by course coordinator and the faculty members concern during the slot notified by the Controller of Examinations.

(iii) While the paper is set, the Mid-Term Examination papers will not have any alternative, however 20-30% alternatives may be admissible in the End-Term Examination paper.

(iv) The End-Term Examination will be conducted through Superintendent of Examinations, appointed by Vice Chancellor, DTU from time to time.

(v) The evaluation of Mid-Term and End-Term answer sheets of 1$^{st}$ year students may be carried out either by checking one question by one group of examiners and similarly other questions checked by other groups extending the procedure to whole lot of answer sheets. [Centralized checking]

OR

The examiner for one batch shall be other than the instructor of that batch ($A_n$/$B_n$). The examiner of one batch ($A_n$/$B_n$) will check the answer sheets of other batch and this process is rotated for all batches. [Batch based checking].

The same be decided by the coordinating examiner on recommendations by BoS of the concerned department.

(vi) The evaluation of answer sheets for Mid-Term and End-Term Examination of $2^{nd}$- $4^{th}$ yr B. Tech. students shall be done in a de-centralized manner by the concerned examiners.

(vii) Evaluation process should be concluded within specified days from the end of the schedule of examination:

Mid-Term Examination – One week

End-Term Examination – Two weeks

(viii) A notification of slot/date/venue be issued by concerned faculty member under intimation to Controller of Examinations for showing answer sheets to the students. Both Mid-Term & End-Term answer sheets should be shown to the students by the concerned faculty members.

(ix) Policy adopted by individual faculty member for evaluation of answer sheets should be uniform and consistent, and in case any moderation is done for the marks the same should uniformly be applied under intimation to Controller of Examinations.

**R.19 Grading System:**

(i) The academic performance of a student shall be graded on a 10-point scale as per the guidelines given in ***Annexure-B***. The letter grades and their equivalent grade points are listed in ***Table-4.***

(ii) The letter grades awarded to a student in all the courses shall be converted into a semester and cumulative performance index called the Semester Grade Point Average (SGPA) and Cumulative Grade Point Average (CGPA), to be calculated

by the procedures given in ***Annexure-B*** of these Regulations.

(iii) At the end of the program, a student with CGPA of 8.5 and above shall be awarded 'First Division with Distinction' and a student with CGPA between 6.75 and 8.5 shall be awarded "First Division".

(iv) All the passing out students of a class shall be given ranks as **"Rank XXX in a class of YYY Students".**

**R.20 Grade Moderation Committee:**

(i) The BoS of academic department(s) will constitute the Grade Moderation Committee for all the Academic Courses under its purview. The Head of the Department shall be the Chairman of the committee, and other members shall consists of 2 Professors of the department, 2 Associate Professors of the department and 2 Assistant Professors of the department. This committee shall be responsible for adherence to the guidelines for the award of grades and shall include all the concerned Course Coordinators. The Chairman, Grade Moderation Committee shall be responsible for the display of grades in the department and for forwarding the final grades to the Controller of Examinations. The Chairman, Grade Moderation Committees shall also retain the record-copies of the marks and the grades along with the statistical parameters for all the courses moderated. The general guidelines for the moderation of grades are given in ***Annexure-C***. One copy of distribution of marks and the question paper will be sent to the Controller of Examinations along with grades by the department.

(ii) The Grade Moderation Committee for the common courses offered to first year shall consist of all the Course Coordinators of the courses offered to the first year students in a semester with the Dean Academic (UG) as the Chairman. The Chairman, Grade Moderation Committee shall be responsible for the display of grades and for forwarding the final grades to the Controller of Examinations. The Chairman, Grade Moderation Committee shall also retain the record copy of marks and grades along with the statistical parameters for all the courses moderated by the committee.

**R.21 Scrutiny of Grades, Tabulation and Declaration of Results:**

(i) A student may apply for scrutiny of grades to the Chairman, BoS, within three days from the scheduled date of display of grades. A committee consisting of the Dean Academic (UG), the concerned Chairman of the Grade Moderation Committee and the Course Coordinator may check the entry of the weights from different components of evaluation and their addition. The results of scrutiny may lead to either a change in grade due to mistake(s) in any of the aspects scrutinized by the committee or the grade may remain unchanged. The results will be intimated to the Controller of Examinations within three days from the date of receiving the application in the department as per academic calendar. For the first year common course, the Chairman of the Grade Moderation Committee and the Course Coordinator shall constitute the Scrutiny Committee.

(ii) In exceptional circumstances the grade(s) of a student or a number of students may be scrutinized by a committee constituted by the VC.

(iii) The Controller of Examinations shall organize the tabulation of grades and declaration of results. COE shall be the custodian of records related to examination and results.

**R.22 Unfair Means**

In case a student is found adopting or suspected of adopting unfair means before, during or after the examination, or lifting or copying of work(s) of someone else and inserting it in his class work submissions, Project, Dissertation etc. without proper acknowledgement, credit and reference, such penal action shall be taken by the University against the student as may be necessary and adequate to uphold the sanctity and integrity of the examination system and the credibility of the University. The general instructions for penal action for use of unfair means are given in ***Annexure D***.

(i) All the cases regarding use of unfair means practices in the examinations shall be reported and placed before the “Unfair Means Scrutiny Committee”. The Controller of Examinations shall convene the Unfair Means Scrutiny Committee

from time to time as per the requirements.

(ii) The Unfair Means Scrutiny Committee shall be constituted as under:

| | | |
|---|---|---|
| a) | Dean Academic (UG) | Chairman |
| b) | Dean Academic (PG) | Member |
| c) | Dean of Students Welfare | Member |
| d) | Head of the concerned Department | Member |
| e) | AR Academic (UG) | Member |
| f) | Controller of Examinations | Convener |

(iii) For Project, Class Work Submission, Mid-Term Examinations etc., the Course Coordination Committee may report the matter to the BoS. The BoS may after considering the matter reported to it and after giving an opportunity to the concerned student(s) to explain his/her conduct impose appropriate penalty, including the award of grade in the concerned course(s) on the concerned students(s).

**R.23 Attendance, Absence, Leave and Withdrawals:**

(i) All the students of UG program are expected to attend every lecture, tutorial, practical or drawing class scheduled for them.

(ii) The students of UG must have a minimum attendance of 75% of the total number of classes including lectures, tutorials and practicals, held in a subject in order to be eligible to appear at the End-Term Examination for that subject.

(iii) The Dean Academic (UG), authorized by the Vice Chancellor for this purpose may relax the minimum attendance upto 10% for reasons to be recorded. This relaxation may be granted on production of documents showing that the student was either busy in the authorized activities or suffering from any disease. The student should submit these documents to the Course Coordinator and Chairman, BoS within seven days of resuming the studies.

(iv) Under exceptional circumstances, the Vice Chancellor may further relax the

minimum attendance upto 5%.

(v) Attendance of the students shall be monitored and displayed during a semester as per the guidelines approved by the AC/BoM. The guidelines for monitoring the attendance of the students are given in ***Annexure E***.

(vi) The names of the students whose attendance is less than 75% {subject to the relaxation mentioned in 23 (iii) and/or 23 (iv)} in the classes held in a course will be intimated by the Course Coordinator on the last teaching day, to the Chairman, BoS, who will consolidate the list for all such students for all the courses of a given yearly level of a program and display it on the notice board of the Department. The list of such students shall also be forwarded to the CoE. These students shall not be allowed to appear in the End-Term Examination of that course and shall be awarded the grade 'F' irrespective of their performance in Class Work Sessional (CWS)/ Mid Term Examination (MTE) etc.

**R.24 Make-up Examination on Medical / Extra Ordinary Ground:**

(i) Students who have missed the Mid-Term Examination for valid reasons (***Annexure F***) may become eligible for a Make-up Examination subject to the permission given by the Dean Academic (UG) on the clear cut recommendations of Chairman, BoS considering the merit of the case. It may be given to the deserving students. The student should make an application to the Dean Academic UG, through Chairman, BoS, within ten working days from the date of the examination missed, explaining the reasons for his/her absence. Applications received after this period will not be entertained. Further, there will be no make-up of the Make-up Examination.

(ii) If a student is absent during End-Term Examination of a course due to medical reasons or other special circumstance (***Annexure F***), he /she may apply for the award of 'I' grade to the Chairman, BoS of the concerned department offering the course, through the Course Coordinator, Make-up Examination will be allowed only if a student has not been disqualified earlier, due to shortage of attendance. The Chairman, BoS may forward this request to Dean Academic (UG) and COE.

Make-up Examination shall be normally held along with the Supplementary Examination of End-Term Examination to convert 'I' grade to proper letter grade.

**R.25 Supplementary Examination:**

(i) Supplementary Examination in any course(s) shall be permissible only in the semester(s) in which the course(s) is/are run. Supplementary Examination will be held during vacations or latest by one month of the commencement of the next semester, which will be announced by Dean Academic (UG).

(ii) A student will carry the marks obtained by him/her in the Mid-Term Examination, Practical Examination and Sessional.

(iii) Students will be awarded marks as per the performance in Supplementary exam. Accordingly, grades will be awarded on the basis of performance of the student in Supplementary exam and Table- 6 of Absolute marks system.

(iv) Supplementary Examination will be allowed only if a student has not been disqualified earlier, either due to shortage of attendance or use of unfair means.

**R.26 (a) Withdrawal from Course:**

A student who wants to withdraw from a course shall apply through the Chairman, BoS to the Dean Academic (UG), on a prescribed form within one week from the end of the Mid-Term Examination under the advice of his/her Program Advisor. If his/her request for withdrawal is granted, it will be recorded in the registration record of the student and the concerned Course Coordinator will be informed about it. The student will be awarded a withdrawal grade at the end of the semester.

**(b) Semester Withdrawal:**

In case a student is unable to attend classes for more than four weeks in a semester he/she may apply to the Dean Academic (UG) through Chairman, BoS, for withdrawal from the semester, which shall mean withdrawal from all the registered courses in the semester. However, such application shall be made under the advice of the Program Advisor, as

early as possible and latest before the start of the End-Term Examination. Partial withdrawal from the semester shall not be allowed.

**(c) Semester Withdrawal on Medical Grounds:**

(i) In case the period of absence on medical grounds is more than twenty working days during the semester, a student may apply for withdrawal from the semester, if he/she so desires. But as per provisions of Section 26(b) application must be made to the Dean Academic (UG) through Chairman, BoS under the advice of the Program Advisor, as early as possible and latest before the beginning of End-Term Examination.

(ii) Any application on medical grounds shall be accompanied with a medical certificate from University doctor/Medical Officer. A certificate from a registered medical practitioner containing the registration number may also be accepted in those cases where a student is normally residing off-campus or becomes ill while away from the University.

**(d) Rustication/Suspension/ Withdrawal from a Semester/year:**

A student rusticated from the University or suspended or debarred from the classes due to any reason whatsoever or having withdrawn from a semester/year on medical grounds, shall have to meet the requirement of 75% attendance in each course in a semester and shall have to complete the program within its maximum time limit of seven years for four year UG program as specified in Regulations excluding the period of expulsion, if any.

**R.27 Termination of Enrolment:**

**(i) Due to Absence:**

If a student registered in the first year of the program is continuously absent from the classes for more than four weeks without informing the Course Coordinators,

the Coordinator shall immediately bring it to the notice of Chairman, BoS, of the concerned department for informing the Dean Academic (UG). The names of such students shall be removed from the University rolls and such absence during first year will render the student ineligible for re-admission.

**(ii) On Academic Grounds:**

a) The student who has earned not more than 10 credits at the end of first semester shall be given a warning for his/her poor performance by Dean Academic (UG). The enrolment of a student in a program shall stand terminated if he/she fails to earn 18 credits at the end of first year. The communication regarding termination of enrolment shall be issued by the Dean Academic (UG) within 15 (fifteen) days from the date of declaration of results.

b) The duration of the B. Tech. program is 4 years i.e. 8 semesters. The enrolment of a student will stand cancelled at the end of 7 years from the date of initial registration in the first semester.

c) A student whose enrolment has been terminated may appeal to the Vice Chancellor for reconsideration within fifteen days from the date of issuance of the communication of termination and the appeal will be disposed off within fifteen days. If the appeal is allowed, his/her registration and enrolment shall be restored.

**R.28 Earned Minimum Credits and Minimum CGPA for the Degree:**

(i) The credits for the courses in which a student has obtained 'P' (minimum passing grade for a course) grade or higher shall be counted as Credit Earned by him/her. A student who has a minimum CGPA of 5.0 and earned the required number of credits as specified in the UG curriculum he/she is registered for, is eligible for the award of the respective degree.

(ii) A student, who has earned the minimum credits required for a degree but fails to obtain the minimum specified CGPA for this purpose, shall be allowed to register

in course(s) till the minimum CGPA is attained within the maximum time limit for different programs.

**R.29 Scholarship, Prizes, Medals and Merit Certificate:**

(i) The University shall award the merit-cum-means (MCM) scholarships, University free studentship, SC/ST category University scholarship and other scholarships, award and prizes to the student of UG programs as may be approved by the AC/ BoM. Other scholarships may be awarded by the University from the grant from individuals, trusts, organizations and the Governments with a view to provide financial assistance to needy students under the terms and conditions specified by the University. Announcements on these scholarships stating eligibility and the value of scholarships etc. shall be made by the University while inviting applications from time to time.

(ii) Those students, who have been punished for unfair means during Mid Term examination (MTE) or End Term Examination (ETE) or in Seminars/ project/ etc. or for serious act of indiscipline shall not be awarded Merit-cum-Means Scholarship and other trust scholarship or Medals, Prizes and awards for that academic session only.

(iii) Student may draw scholarships from outside sources only if permitted by Dean Academic (UG).

**R.30 Interpretation of Regulations:**

In case of any dispute, difference of opinion in interpretation of these Regulations or any other matter not covered in these Regulations, the decision of the Chairman, AC shall be final and binding.

**R.31 Emergent Cases:**

Not withstanding anything contained in the above Regulations, the Chairman of the AC may, in emergent situation, take such action including insertion, suspension or modification of any Regulation(s) on behalf of the AC as he/she deems appropriate and report it to the next meeting of the AC for its approval.

**ANNEXURE - A**

# Course Structure for B. Tech. Program

## FIRST YEAR

| First Semester | | | |
|---|---|---|---|
| **S.No.** | **Subject** | **Credits** | **Category** |
| 1. | Mathematics-I | 4 | ASC |
| 2. | Physics-I | 4 | ASC |
| 3. | Chemistry / Basic Electrical Engineering | 4 | ASC/AEC |
| 4. | Basic Mechanical Engineering / Programming fundamentals | 4 | AEC |
| 5. | Workshop Practice / Engineering Graphics | 2 | AEC |
| 6 | Communication Skills / Environmental sciences | 3 | HMC/AEC |
| | **Total** | **21** | |
| **Second Semester** | | | |
| **S.No.** | **Subject** | **Credits** | **Category** |
| 1. | Mathematics-II | 4 | ASC |
| 2. | Physics-II | 4 | ASC |
| 3. | Basic Electrical Engineering / Chemistry | 4 | AEC/ASC |
| 4. | Programming fundamental / Basic mechanical Engineering | 4 | AEC |
| 5. | Engineering Graphics / Workshop Practice | 2 | AEC |
| 6 | Environmental sciences / Communication Skills | 3 | AEC/HMC |
| | **Total** | **21** | |

## SECOND YEAR

| Third Semester | | | |
|---|---|---|---|
| **S.No.** | **Subject** | **Credits** | **Category** |
| 1. | Allied Engineering Course-1 | 4 | AEC |
| 2. | Department Core Course-1 | 4 | DCC |
| 3. | Department Core Course-2 | 4 | DCC |
| 4. | Department Core Course-3 | 4 | DCC |
| 5. | Engineering Analysis and Design | 4 | DCC |
| 6. | Humanities / Management Course | 3 | HMC |
| | **Total** | **23** | |

| Fourth Semester | | | |
|---|---|---|---|
| **S.No.** | **Subject** | **Credits** | **Category** |
| 1. | Allied Engineering Course-2 | 4 | AEC |
| 2. | Department Core Course-4 | 4 | DCC |
| 3. | Department Core Course-5 | 4 | DCC |
| 4. | Department Core Course-6 | 4 | DCC |
| 5. | Department Core Course-7 | 4 | DCC |
| 6 | Humanities / Management course | 3 | HMC |
| | **Total** | **23** | |

## THIRD YEAR

| Fifth Semester | | | |
|---|---|---|---|
| **S.No.** | **Subject** | **Credits** | **Category** |
| 1. | Department Core Course – 8 | 4 | DCC |
| 2. | Department Core Course – 9 | 4 | DCC |
| 3. | Department Elective Course – 1 | 4 | DCC/DEC/GEC |
| 4. | Department Elective Course – 2 | 4 | DCC/DEC/ GEC |
| 5. | Open Elective Course | 3 | OEC |
| 6. | Professional Ethics and Human Values/ Technical Communication | 2 | HMC |
| | **Total** | **21** | |
| **Sixth Semester** | | | |
| **S.No.** | **Subject** | **Credits** | **Category** |
| 1. | Department Core Course – 10 | 4 | DCC |
| 2. | Department Core Course – 11 | 4 | DCC |
| 3. | Department Core Course – 12 | 4 | DCC |
| 4. | Department Elective Course -3 | 4 | DEC/ GEC |
| 5. | Department Elective Course - 4 | 4 | DEC/ GEC |
| 6. | Technical Communication/ Professional Ethics and Human Values | 2 | HMC |
| | **Total** | **22** | |

## FOURTH YEAR

| Seventh Semester | | | |
|---|---|---|---|
| **S.No.** | **Subject** | **Credits** | **Category** |
| 1. | B.Tech. Project | 4 | DCC |
| 2. | Training Seminar | 2 | DCC |
| 3. | Department Core Course - 13 | 4 | DCC |
| 4. | Department Core Course -14 | 4 | DCC |
| 5. | Department Elective Course - 5 | 4 | DEC/ GEC |
| 6. | Department Elective Course - 6 | 4 | DEC/ GEC |
| | **Total** | **22** | |
| **Eighth Semester** | | | |
| **S.No.** | **Subject** | **Credits** | **Category** |
| 1. | B.Tech. Project (Contd. From VII semester) | 8 | DCC |
| 2. | Department Core Course - 15 | 4 | DCC |
| 3. | Department Elective Course - 7 | 4 | DEC/ GEC |
| 4. | Department Elective Course - 8 | 4 | DEC/ GEC |
| | **Total** | **20** | |

**ANNEXURE - B**

**Table- 4 Structure for Grading of Academic Performance**

| Academic Performance | Grades | Grade Points |
|---|---|---|
| Outstanding | O | 10 |
| Excellent | $A^+$ | 9 |
| Very Good | A | 8 |
| Good | B+ | 7 |
| Above Average | B | 6 |
| Average | C | 5 |
| Pass | P | 4 |
| Fail | F | 0 |
| Incomplete | I | - |

**Explanation:**

**'F' Grade**

The 'F' grades denote poor performance, i.e. failing course. 'F' grade is also awarded in case of poor attendance (see attendance Rules)

For the other (elective) course in which 'F' grade has been awarded, the student may take the same course or any other course from the same category. Further, 'F' grade secured in any course stays permanently on the grade card. The weight of 'F' grade is not counted in the calculation of the CGPA however, it is counted in the calculation of the SGPA.

In case a student is awarded a failing grade in the major / minor project, he/she shall have to repeat the course in the form of a new project. Such a student will have to work full time on the project for a minimum period of four months and maximum 'B' grade can be awarded to the student.

**'I' grade**

This refers to an 'incomplete' grade which is required to be converted into a regular letter grade as provided in Section 24(ii) of Regulations for the B. Tech. programs. The guidelines for the award of 'I' grade are given in ***Annexure-B 3***.

**Calculation of Semester Grade Point Average (SGPA) and Cumulative Grade Point Average (CGPA)**

$$\text{S.G.P.A.} = \frac{\sum_{i=1}^{n} C_i \times P_i}{\sum_{i=1}^{n} C_i}$$

Where,

$C_i$= Number of Credits of the $i^{th}$ course of a semester for which SGPA is to be calculated

$P_i$= Grade Point obtained in $i^{th}$ course

$i$ =1, …….n, represent the number of course in which a student is registered in the concerned semester.

$$\text{C.G.P.A.} = \frac{\sum_{i=1}^{m} C_i \times P_i}{\sum_{i=1}^{m} C_i}$$

Where,

$C_i$ = Number of Credits of the $i^{th}$ course of a semester.

$P_i$ = Grade Point obtained in $i^{th}$ course. A grade lower than 'P' (i.e. grade point < 4) in a course shall not be taken into account.

$i$ =1, ……. m, represent the number of courses in which a student was registered and obtained a grade not lower than 'P' upto that semester for which CGPA is to be calculated.

## General Guidelines for the Award of Grades

The following are the general guidelines for the award of grades:

(i) All evaluations of different components of a course shall be done in marks for each student.

(ii) The marks of various components shall be reduced to approve weights as indicated in the scheme of Teaching and Examination and added to get total marks secured on a 100-Point scale. The rounding off shall be done only once and on the higher side.

(iii) The method suggested in ***Annexure-B1*** shall be used for the award of grades with or without marginal adjustment for natural cut- offs.

(iv) In case of any difficulty the method suggested in ***Annexure-B2*** can be used.

(v) It is suggested that there will not be more than 10% (rounded off to near integer value) $A^+$ grade.

(vi) The provisional grades shall be awarded by the Coordination Committee of the course consisting of all the teachers involved in that course. The course coordinator shall have full responsibility for this purpose.

(vii) The grades so awarded shall be moderated by BoS of a Department.

(viii) For a student to get passing grade, he / she will have to appear in End-Term Examination.

(ix) The procedures for evaluation and award of grades for major project and industrial training seminar shall be as given in the ***Annexure B4-B5*** of Regulations for the B. Tech. programs.

**ANNEXURE-B1**

**Statistical Method for the Award of Grades (For Courses in which number of students is more than 30)**

For the award of grades in a course, all component-wise evaluation shall be done in marks. The marks of different components viz. Mid Term Examination (MTE), End Term Examination (ETE), Course Work Sessionals (CWS) and Practical Sessionals (PRS) would be reduced to relative weights of each components as approved by the AC and added. Marks so obtained shall be out of 100 and the same would be converted to grades following the guidelines given below:

The statistical method shall invariably be used , with marginal adjustment for natural cut-off. The mean and the standard deviation of marks obtained of all the students in a course shall be calculated and used to convert the marks into normal variate (Z). The normalized marks (Z) shall be arranged in decreasing order to work out ranges for different letter grades.

$$Z = \frac{X - \overline{X}}{\sigma}$$

Where X = Actual Marks obtained, $\overline{X}$ = Mean of marks and $\sigma$ = Standard deviation.

The grade boundaries are left to the discretion of BOS. However, a minimum of 'P' grade will be awarded if the student scores 35 or more marks in aggregate in a course. A minimum of 'C' grade will be awarded to students who score 46 or more marks out of 100. A 'C' grade can however be awarded for less than 46 marks also depending on the mean and the standard deviation of marks obtained of all the students in a course.

The set of boundaries for Z variate is mentioned in the Table-5 below:

**Table-5 : Set of Boundaries for Z variate**

| Lower Range of Z | Grade | Upper Range of Z |
|---|---|---|
| >1.5 | O | -- |
| >1.0 | $A^+$ | ≤ 1.5 |
| >0.5 | A | ≤ 1.0 |
| >0.0 | $B^+$ | ≤ 0.5 |
| >-0.5 | B | ≤ 0.0 |
| >-1.0 | C | ≤ -0.5 |
| >-1.5 | P | ≤ -1.0 |
| -- | F | ≤ -1.5 |

**ANNEXURE-B2**

**Awards of Grades, Based on Absolute Marks System (For Courses in which number of students is less than or equal to 30)**

The award of grades based on absolute marks out of 100 shall be made as given in Table-6 below:

**Table-6: Marks Boundaries for Grades in Absolute Marks System**

| Marks | Grade | Marks |
|---|---|---|
| 91≤ | O | ≤ 100 |
| 82 ≤ | $A^+$ | ≤ 90 |
| 73≤ | A | ≤ 81 |
| 64 ≤ | $B^+$ | ≤ 72 |
| 55 ≤ | B | ≤63 |
| 46 ≤ | C | ≤54 |
| 35 ≤ | P | ≤ 45 |
| - | F | ≤ 34 |

**ANNEXURE-B3**

**Award of 'I' Grade**

a) If a student is absent during End-Term Examination of a course due to medical reasons or other special circumstances, he / she may apply for the award of 'I' grade to the Chairman, BoS through the Course Coordinator, provided that he / she has not been disqualified due to shortage of attendance. The concerned course coordinator shall have to be convinced about the extraordinary circumstances and shall have to certify the attendance record before this rarely used option to award 'I' grade is recommended. The Chairman, BoS may award 'Ab' grade.

b) The 'I' grade so awarded shall be notified by the Department to which the student belongs and a copy of the notification will be endorsed to the COE and to the concerned Course Coordinator (e.g. the notification for 'I' grade of a Mechanical Engineering student will be notified by the Department of Mechanical Engineering on the recommendation of the concerned Course Coordinator, even if the course pertains to another Department).

c) The 'I' grade shall be converted into a proper letter grade as per the provisions in Regulation 24(ii) after make-up examination is over and the requirements of the course are completed by the student and shall be sent to the COE.

d) In extra ordinary circumstances, the period of conversion of 'I' grade may be extended to the next semester, with the approval of the Dean Academics (UG) on his own or on the recommendation of the Course Coordinator and the Head of the Departments.

e) In extra-ordinary circumstances, on the recommendation of the Dean Academic (UG), the Vice-Chancellor may order the award of 'I' grade to a student/class or a batch of students taking a particular course. The conversion of 'I' grade into a regular grade or any other action shall be as per the directive of the Vice-Chancellor.

**ANNEXURE-B4**

**Evaluation of Industrial/Field Training**

a) Every student will submit a written report to the Training and Placement Department on the work carried out during the training period along with a certificate from the Organization where training was undertaken. HoD of Training and Placement will forward all these reports to respective departments.

b) A time slot of 2 hour/week/batch will be assigned in the student time table and the students will be asked to present their work in the form of a seminar of about 30-minutes duration, before a committee appointed by the BoS and other students of that batch.

c) The performance of the students will be evaluated by the committee in marks on the basis of (i) the training report, (ii) presentation, (iii) viva-voce.

d) Although normal attendance will not apply to this course component, 10-20% marks will be awarded on the basis of attendance in seminars to encourage participation of the entire class.

e) The grades will be computed on the basis of the established procedure as for other courses.

f) The grade moderation committee for the course will be the same as that for the other courses of the class.

g) If a student is awarded a “F” grade in this course, he / she shall have to repeat the course by undergoing 6-10 week training either at the University or at an organization outside the University during the summer vacation following the eighth semester.

**ANNEXURE - B5**

**Procedure for Conduct and Evaluation of B. Tech. Project**

a) This course will be offered in the final year of the B. Tech. program and its total duration will be two semesters.

b) Head of the department shall appoint a project coordinator on the advice of BoS from amongst the faculty members of the department who will act as the course coordinator.

c) The project can be carried out by the student either individually or in a group. However the number of students in a group will generally not exceed four.

(d) The project coordinator will invite proposals from the faculty members and students and finalize the project problems allotted to various groups by August 31, in the 7th semester.

e) An L-T-P loading of 0-0-4 and 0-0-8 will be shown in the time table of students in the seventh and eighth semesters, respectively and the students would be required to work on their projects during these periods. However, no teacher will be assigned for these periods and the progress of students will be monitored by their respective supervisors.

f) The evaluation will be based upon Mid–Term examinations (MTE) and an End-Term examination (ETE) with a weightage of 40% and 60% respectively.

g) Mid-Term examination will be held in each of the 7th and 8th semesters. The Mid-Term examination will involve report submission, presentation and oral viva-voce. For this purpose, suitable committees will be constituted by the BoS for evaluation of report, presentation and oral viva-voce. The project examination committees will award marks to individual students and forward them to the project coordinator who will maintain these record.

h) The end term project examination will be carried out at the end of 7th (for 4 credits) and 8th (for 8 credits) semester respectively, within 10 days form the last theory paper. For this purpose, suitable examination committees will be appointed by the BoS in consultation with the project coordinator, with at least one external examiner. In case an examiner from outside the University is not available, faculty member of the University from outside the Department may be appointed as an external examiner after taking his/her consents.

i) The students will be required to submit a final project report to the project coordinator, at least 3 days before the date of final project examination.

j) The final examination may be in the form of demonstration in the laboratory and viva-voce or only viva-voce depending upon the nature of the project.

k) The examination committee will award marks to individual students and forward them to project coordinator who will compute grades in accordance with the prescribed procedures.

l) The Grade Moderation Committee for the course will be the same as that for other courses of the class.

m) In case a student is awarded a failing grade in the major project, he / she shall have to repeat the course in the form of a new project. Such a student will have to work full time on the project for a minimum period of 4 months.

n) Normal attendance regulations will not apply to this course.

**ANNEXURE - C**

**Guidelines for Moderation of Grades**

a) The date of moderation should be made a part of the Academic Calendar of the University.

b) Two-tier moderationbe adopted, both for the subject and for the Semester (SGPA, CGPA), Minor adjustment should be possible during moderation, particularly in the marginal cases. Chairman, BOS should invariable retain a copy of the grades sent to Examination Section so that CGPAs may be calculated without having to make a reference to the Examination Section for this purpose.

c) All concerned faculty members should invariably be present for the moderation committee meeting in case a faculty member anybody is going out on University duty, he/she will hand over his/her inputs for moderation with a colleague, who should present it, in the meeting.

**ANNEXURE - D**

**Instruction for Penalty for Use of Unfair Means**

1. The main instruction for the conduct of a student in the examination hall shall be printed on the cover page of the answer sheets. Any contravention of these instructions and the use any unfair means will render the student liable for punishment.
2. As soon as student is suspected by the invigilator having resorted to unfair means, his/her `answer-book shall be seized. The paper etc. duly signed by the invigilator found in possession of the student shall be attached with answer-book in his/her present. The student shall then be asked to complete part II of the prescribed form and sign it. This form shall than be endorsed by the Invigilator.
3. After completing all the above formalities, a fresh answer-book shall be given to the student for completing the examination.
4. After a particular examination is over, these answer-books (duly marked I, II) shall or delivered separately to the COE together with the report form duly completed in all respects.
5. All the cases reported in the category of unfair means shall be forwarded to the unfair means scrutiny committee which will inquire into them and submit its recommendation after laying down clearly the nature of the offence listed below to the Vice-Chancellor for consideration and necessary orders.
6. The action as given in table may be taken for different categories of offense under these Regulations.

**Penalty for use of Unfair Means**

| S.No. | Nature of Offence | Action to be Taken |
|---|---|---|
| A | a) A student found talking to another student during the examination hours.<br>b) If during the examination hours i.e. after receipt of the question- paper and before handling over the Answer book a student is found to be talking to a person outside the examination hall while going to the urinal etc. | The first answer-book to be withdrawn and cancelled and the second answer book to be provided and evaluated. |

| S.No. | Nature of Offence | Action to be Taken |
|---|---|---|
| | c) Changing seat in the examination- hall without permission.<br>d) Committing any breach of any direction given to the student. | |
| B | a) Attempt to influence the examiner by an appeal in the answer-book.<br>b) Writing either the questions set in the paper or solutions thereof on paper/electronic device etc. while during the examination.<br>c) Possession of cell phone or any other item of such type of communication in examination hall.<br>d) Intentionally tearing off the Answer Book/a part thereof or a continuation sheet.<br>e) Using abusive or obscene language in the answer book.<br>f) Misbehaving with the Superintendent/ Invigilator/staff on duty or with any other candidate in or around the Examination Centre before, during or after the examination.<br>g) Leaving the examination room without the permission of the Superintendent of the Examination or without handing over the answer book to the Invigilator /In-charge or without signing the attendance sheet. | The examination of the concerned paper to be cancelled. |
| C | To be found in possession of any written or cyclostyled notes or any printed materials or notes written on any part of the body/clothing or instruments such as set square, electronic device etc. or having notes written on chair, table, desk or drawing board or cover of the calculator etc which could be helpful to him/her in answering the paper or could be helpful to another candidate in that Examination Hall during the examination. | All the examinations (Theory + Practical) including back papers and the marks awarded in quizzes, marks for continued evaluation and mid-term examination and end term examination for that semester to be cancelled. This implies that registration of the student for that Semester stands cancelled. |

| S.No. | Nature of Offence | Action to be Taken |
|---|---|---|
| D | a) If during the examination hours i.e. after receipt of the question paper and before handling - over the answer book a student is found:<br>i) To be copying or to have copied from any paper, book or note written on any part of his/her clothing or body or table or desk or instruments like setsquare, etc.<br>ii) To be consulting notes or books while being outside the examination hall during examination hours.<br>iii) Passing on a copy of question(s) set in paper or solution thereof to any one.<br>iv) To have received help from or given help to another candidate through some written material/ electronic device pertaining to the questions set in the paper concerned.<br>v) To have allowed any other candidate to copy from his/her answer-book.<br>vi) Communicating or attempting to communicate directly or through someone else with the examiner or anybody connected with the University examination for influencing them in the award of marks.<br>b) The candidate on being challenged/searched during the course of examination by the Superintendent, Invigilator or a staff on duty, swallows a note/ paper or runs with it or is guilty of causing disappearance or destroying any such material with the intention of obliterating the evidence of the material possessed by him/ her.<br>c) Gross misbehavior i.e. threatening with physical force in connection with the examination with the Superintendent, the Invigilator/ staff on duty working at the Examination Centre with any other candidate in or around the examination Centre, before, during or after the Examination.<br>d) When the candidate disturbs the examination or attempts to do so. | All the examinations (Theory + Practical) including back papers and the marks awarded in quizzes, marks for continued evaluation and mid-term examination and end term examination for that semester to be cancelled. This implies that registration of the student for that Semester stands cancelled, and the student to be debarred from registering the courses offered for next semester except for back papers (for which attendance is not required and the student has acquired marks for continued evaluation and mid semester examination). The University Campus thus remains debarred for such student for next semester, except that he/she is allowed to sit in back paper examination. However, for continuation of registration in the degree program. The student has to pay the fees as applicable to a UG/PG student even for the period of his/her debarment. |

| S.No. | Nature of Offence | Action to be Taken |
|---|---|---|
| E | a) Found in possession of a solution of a question set in the paper through the help of any student, supervisory or ministerial staff or some other agency.<br>b) Found guilty of having made previous arrangement to obtain help in connection with the question paper in cases not covered by the above provision.<br>c) Smuggling in an answer-book or part of it, taking out or arranging to send out an answer-book or part of it.<br>d) When the candidate replaces or gets replaced during the course of the examination his / her answer book or any page or continuation sheet with any other unauthorized book, page or continuation sheet.<br>e) When the candidate replaces or gets replaced an answer book or its any page or continuation sheet after the examination or manages to write or gets written an answer book including the continuation sheet, if an answer to any of the questions which he had not written earlier during the examination. | All the examinations (Theory+Practical) including back papers and the marks awarded in quizzes, marks for continued evaluation and mid-term examination and end term examination for that semester to be cancelled. This implies that registration of the student for that Semester stands cancelled, and the student to be debarred from registering the courses offered for the next semester including back papers. The University Campus thus remains debarred for such student for next semester and he/she will only be able to register for courses in the University for next to next semester. However, for continuation of the registration in the program he/she has to pay the fee as applicable to UG/PG student even for the period debarment. |
| F | **Found guilty of:**<br>a) Writing deliberately another students' roll no. in his/her answer book or found in possession of an answer-book not his/her own or impersonating another candidates in any examinations.<br>b) Guilty of serious misconduct in the examination hall or non - compliance with the instructions of the superintendent or any of the invigilators in the examination hall. | All the examinations (Theory+Practical) including back papers and the marks awarded in quizzes, marks for continued evaluation and mid-term examination and end term examination for that semester to be cancelled. This implies that registration of the student for that Semester stands |

| S.No. | Nature of Offence | Action to be Taken |
|---|---|---|
| | | cancelled, and the student to be debarred from registering the courses offered for the next semester including back papers. The University Campus thus remains debarred for such student for next two semesters or expulsion from the University depending on the gravity of the offence, and he/she will only be able to register for courses in the University after the expiry of two semesters. However, for continuation of the registration in the program he/she has to pay the fee as applicable to UG/PG student even for the period debarment. |
| G | **Found guilty of:**<br>a) Inciting other students to leave the examination room or disrupt the examination or attempts to do so.<br>b) Gross misbehavior in connection with the examination with the Invigilator on duty or the other staff working at the examination and is also guilty of assault or inflicting any injury on such person. | All the examinations (Theory+Practical) including back papers and the marks awarded in quizzes, marks for continued evaluation and mid-term examination and end term examination for that semester to be cancelled. This implies that registration of the student for that Semester stands cancelled, and the student to be debarred from registering the courses offered for the next semester including back papers. The University Campus thus remains debarred for such student |

| S.No. | Nature of Offence | Action to be Taken |
|---|---|---|
| | | for next three semesters or expulsion from the University depending on the gravity of the offence and he/she will only be able to register for courses in the University after the expiry of three semesters. However, for continuation of the registration in the program he/she has to pay the fee as applicable to UG/PG student even for the period debarrement. |
| H | a) Any person who is not a candidate for any examination found committing or abetting in committal of any of the offences mentioned above. | To be dealt with by the Vice Chancellor in an appropriate manner. |
| I | Cases Not Covered by These Regulations. | To be decided by the Vice Chancellor. |

**Note:**

(a) In these Regulations the year means the academic year.

(b) Having once made use of dishonest or unfair means or having once indulged in disorderly conduct in the examination, if the candidate again makes use of dishonest or unfair means or indulges in disorderly conduct in the same examination, he/she shall be awarded punishment prescribed in that sub-clause which is next to the once in which his/her case falls or any higher punishment.

(c) In case of extenuating circumstances, the above punishment may be reduced by the Vice-Chancellor depending upon the merits of the case.

# FORM FOR REPORTING CASES OF USE OF OR ATTEMPT TO USE UNFAIR MEANS AT THE UNIVERSITY EXAMIANTION

**Note:** One sheet should be used for one candidate only, if printed forms run short, the form should be photocopied and used.

## PART - I

Name of examination ……

Name of Student …..…….... Roll No. ……....

Complete Postal Address (Including Phone/Mobile No.)…….

……..

Subject in which the candidate is reported to have used or intended to use unfair means …….....

Day ……..…….…… Date ….....…....……. Time ……

1. Particular of book, papers, electronic gadgets etc found in possession of the student and submitted along with the answer sheet (all these materials should be signed by the Invigilator of examination and the student).

   Name of book (if any) (a) …….....……

   (b) …….....……..…….

   (c) ….....……

   Number of leaves of books ….....…….

   Number of (a) Manuscript slips: ….....……. Sheets …….....

   Any other articles such as electronic gadget etc.

   (a) ….....……

   (b) ….....……

   (c) ….....……

## PART - II

2. Statement of the student to be obtained at once in his/her own handwriting.

Were the above articles recovered from your possession? ……

Why did you keep them with you inspite of clear instructions? ……

Did you make any use of them? ……

Have you anything else to state? ……

Date ……..…… Time ……..……. (Signature of Student)

Certified that this statement was made in my presence.

Certified that the candidate declined to give any statement. (Certificate not applicable should be crossed by the invigilator)

Date ……..…… Time ……..……. (Signature of Invigilator)

Date ……..…… Time ……..……. (Signature of Superintendent)

**ANNEXURE - E**

**GUIDELINES FOR ATTENDANCE RECORDS AND PREPARATION OF LIST OF STUDENTS NOT ELIGIBLE TO APPEAR IN THE END TERM EXAMIANTION**

| Step | Action | Performa to be filled | Target Dates |
|---|---|---|---|
| First | Communication form Chairman, BoS to course coordinator requesting to submit the list of students having short attendance on specified format up to prescribed date. | ATT.1/6 | One week before the last date of display of attendance as per academic calendar |
| Second | Consolidation of the list of such students by Chairman, BOS and Notice from Chairman, BoS for short attendance. | ATT.2/6 | |
| Third | Communication from AR Academic (UG) to parent/guardian of student having short attendance. | ATT.3/6 | |

| Step | Action | Performa to be filled | Target Dates |
|---|---|---|---|
| Fourth | Communication from Chairman, BoS to course Coordinator requesting to submit the final list of students having short attendance on specified format up to prescribed date. | ATT.4/6 | |
| Fifth | Preparation of list of detained students by BoS and recommendation to this effect. | ATT.5/6 | |
| Sixth | Notices from Chairman, BoS regarding detainee to Students Notice Board and AR Academic (UG). | ATT.6/6 | |

**ATT.1/6**

**From Chairman, BoS to Course Coordinators**

DEPARTMENT OF …….....……

**NOTICE**

**LIST OF STUDENTS HAVING SHORTAGE OF ATTENDANCE (<75%)**

Academic Year ….....…… Class ….....……

Semester ….....……. Odd/Even

Course Title …….. Course Code ……

**All Course Coordinators,**

Please inform the name(s) of UG students having less that 75% attendance (L+T+P) upto …….....…….. (as per academic calendar) in the course of which you are the coordinator in Odd /Even Semester …….....……. The information may please be sent to undersigned **latest by** …….....……. In the proforma given below along with a photocopy of attendance record of entire class. If there is no short attendance case in your course, please write NIL in the proforma.

| S. No. | Student Enrolment / Roll Number | Name of Student | Branch | Attendance Record (L+T+P) | | |
|---|---|---|---|---|---|---|
| | | | | Classes Held | Classes Attended | Percentage of Attendance |
| | | | | | | |
| | | | | | | |
| | | | | | | |

Signature

Name of the Course Coordinator …….

**ATT.2/6**

**From Chairman, BoS to Notice Boards**

DEPARTMENT OF …….....

**NOTICE**

**LIST OF STUDENTS HAVING SHORTAGE OF ATTENDANCE (<75%)**

**Academic Year …..…… Class ……. Semester ……. Odd /Even**

As per attendance Regulations in force, a student is required to have attended at least 75% of the total classes held in a subject, in order to be eligible to appear in the end-term examination of that subject. Upto ……. (as per academic calendar, the following students are having short-attendance in the courses indicated against their names. These students are advised to be extra careful and make up for the short attendance; otherwise they may be debarred from appearing in the end term examination.

| S. No. | Student Enrolment/ Roll No. | Name of Student | Branch | Course | | Percentage of Attendance |
|---|---|---|---|---|---|---|
| | | | | Code | Title | |
| | | | | | | |
| | | | | | | |
| | | | | | | |

**Chairman, BOS**

**Copy to:**

1. AR Academic (UG) to inform student's parent / guardian.
2. Students Notice Board.
3. Respective program advisors with the request to call the students and counsel them.

**ATT.3/6**

**NOTICE UNDER CERTIFICATE OF POSTING**
**From Assistant Registrar Academic (UG) to student's parent / guardian**
**LIST OF STUDENTS HAVING SHORTAGE OF ATTENDANCE (<75%)**

**No:** **Dated ……**

Dear Guardian / Parent,

Your ward is studying B. Tech.. ( ……Year ) degree course at this University.

I have to inform you that as per B. Tech. Regulations of the University governing the attendance of the students, a student is required to have at least 75% attendance in

a course in a semester to be eligible to appear in the End-Term Examination of that course. But your ward is not attending the classes regularly and his / her attendance has fallen below the required level in following course(s).

| S.No. | Course | | |
|---|---|---|---|
| | Code | Title | Percentage of attendance |
| | | | |
| | | | |
| | | | |

This is for your kind information. You may also kindly advise your ward to be regular in attending the classes and bring his/her attendance to the required level failing which he / she will not be allowed to appear in the examinations.

Yours truly,

**AR Academic (UG)**

**ATT.4/6**

**From Chairman, BoS to Notice Boards**
**LIST OF STUDENTS HAVING SHORTAGE OF ATTENDANCE (<75%)**

DEPARTMENT OF ……..

Academic Year …….……

Semester …….……. Odd / Even

Course Title ……... Course Code ……

**All Course Coordinators,**

Please inform the names of UG students having less that 75% attendance (L+T+P) upto …….. (as per academic calendar) in the course of which you are the

coordinator in Odd /Even Semester ……. The information may please be sent to undersigned **latest by** ……. In the proforma given below along with a photocopy of attendance record of entire class. If there is no short attendance case in your course, please write NIL in the proforma.

| S. No. | Student Enrolment / Roll No. | Name of Student | Branch | Attendance Record (L+T+P) | | |
|---|---|---|---|---|---|---|
| | | | | Classes Held | Classes Attended | Percentage of Attendance |
| | | | | | | |
| | | | | | | |
| | | | | | | |

Name of the Course Coordinator …… Signature

**ATT.5/6**

**From Chairman, BOS to Student Notice Boards**

DEPARTMENT OF ……..

**LIST OF STUDENTS NOT ELIGIBLE TO APPEAR IN END-TERM EXAMINATION AS PER REGULATIONS**

Academic Year ……..…… Class ……....

Semester ….....……. Odd / Even

Course Title ……..

Course Code ……..

| S.No. | Enrolment / Roll No. | Name of Student | Percentage of Attendance |
|---|---|---|---|
| | | | |
| | | | |
| | | | |
| | | | |

1. (a) Dates on which the names of the students were placed on the Notice Boards of the Department …….....

   (b) If the names of the students were note placed on the Notice Boards, specify the reasons for the same.

2. As per the information given by all teachers of this subject, there are no other cases of shortage of attendance in this subject.

3. The students as listed above are detained from appearing in the end term examination in the subject noted above as per the attendance record given above.

**Signature of Chairman, BoS**
**Members of Academic Committee**
**(CHAIRMAN)**

**From AR Academic (UG)**

**LIST OF STUDENTS HAVING SHORTAGE OF ATTENDANCE (<75%)**

Academic Year …….....……

Class …….....

Semester ….....……. Odd / Even

**OFFICE ORDER**

As per Attendance Regulations ……. and recommendation made by competent authority, following students are not eligible to appear in End-Term Examination of Odd / Even semester in the courses mentioned before their name. Invigilators are requested not to allow these students to appear in the concerned examinations.

| S.No. | Course | | Roll number of students detained for end term examinations. |
|---|---|---|---|
| | Code | Title | |
| | | | |
| | | | |
| | | | |

**Date :** **Assistant Registrar Academic (UG)**

**Copy to:**

1. Dean Academic (UG)
2. All HODs
3. Superintendent of Examinations (B. Tech.)
4. Registrar
5. Controller of Examinations.

## ANNEXURE-F

**Academic Section (UG)**

**Delhi Technological University**

**FORM OF APPLICATION**

**for**

**Make-up Examination for Mid / End Semester (Odd / Even)**

**Examination 201____ - 201____**

| The form when completed should be submitted to:<br>**The Assistant Registrar,**<br>**Academic Section(U.G.),**<br>***Delhi Technological University*** | ***(For use by the Academic Section {UG})***<br>**Permitted** by Dean Acad.(UG) /<br>**NOT Permitted** by Dean Acad.(UG) |
|---|---|
| **To be filled in by the applicant** | |
| **Name**:……..…… | *Address for Communication*: |
| **Roll No**: ……..…… | ……..……..…… |
| Mobile No……..…… | ……..……..…… |
| Email: ……..…… | ……..……..…… |

### A. Courses requested for Make-up Examination:

| S. No. | Course Code | Name of the Course | Credits | Date & time slot of the Exams scheduled | Reason for missing the Exams |
|---|---|---|---|---|---|
| 1 | | | | | |
| 2 | | | | | |
| 3 | | | | | |
| 4 | | | | | |
| 5 | | | | | |
| 6 | | | | | |

**B. Supported Mandatory Documents for the claim:**
**(*Please tick the annexed documents below*)**

| | |
|---|---|
| 1 | Recommendation of concerned Warden (***if the student resides in University Hostel***) |
| 2 | Medical Certificate issued by the Medical Officer of the Hospital the student was admitted duly endorsed by Medical Officer of University Health Centre |
| 3 | Proof of admission in Hospital and discharge slip etc |
| 4 | Proof of medical tests conducted |
| 5 | Fitness certificate of the hospital |
| 6 | Endorsement by parent/guardian on the certificate of treatment (***if the student is a Day Scholar***) |
| 7 | Medical certificate from hospital where Parents/real brother or sister/spouse was admitted in ICU duly endorsed by Medical Officer of University Health Centre |
| 8 | Prior Approval of Dean Academic (UG) for any authorized work in the academic interests |

**DECLARATION**

I hereby solemnly declare that the foregoing facts are true and correct and nothing is false therein and nothing material has been concealed there from. I also agree that in case any information given by me herein before is found false at later date, the result for the requested courses for make-up examination be cancelled.

Signature of the Parents/Guardian
Name (in Capital Letters)

Date :

Place :

Signature of Student
Name (in Capital Letters)

Date :

Place :

# SECTION-C

## B.Tech. (Evening) Ordinances
## &
## Regulations (ORDINANCE 5-A)

# DELHI TECHNOLOGICAL UNIVERSITY

## Ordinance (5A)

*(For batches 2015-16 and onwards)*

### Preamble

The University offers 4 B.Tech. (Evening) programs of four years duration leading to Bachelor of Technology (Evening) degree in following disciplines.

**Table-1 UG (Evening)Programs**

| S. No. | Academic Program | Code | Duration (in Years) | Department |
|---|---|---|---|---|
| 1. | B. Tech. (Evening) Civil Engineering | CE | 4 | Civil Engineering |
| 2. | B. Tech. (Evening) Electrical Engineering | EE | 4 | Electrical Engineering |
| 3. | B. Tech. (Evening) Electronics & Communication Engineering | EC | 4 | Electronics & Communication Engineering |
| 4. | B. Tech. (Evening) Mechanical Engineering | ME | 4 | Mechanical Engineering |

**Structure of Undergraduate programs**

Structure of four year B. Tech. (Evening) programs comprise of courses divided in seven distinct areas, namely: Departmental Core (DCC), Departmental Elective (DEC), Generic Elective Courses (GEC), Allied Engineering (AEC), Applied Sciences and Mathematics (ASC), Humanities, Social Sciences and Management (HMC) and Open Electives(OEC), as defined in the preamble of B. Tech. Ordinance 1-A.

**Table 2 Credits of different curricular components**

| CURRICULAR COMPONENTS | | Credits |
|---|---|---|
| **(a)** | **Departmental Core Courses (DCC)** | |
| i. | Core Courses | 60-64 |
| ii. | Engineering Analysis and Design | 04 |
| iii. | B. Tech. (Evening) Project | 12 |
| | **Total** | **76-80** |
| **(b)** | **Humanities, Social Sciences and Management Courses (HMC)** | |
| i. | Humanities and Social Sciences | 05 |
| ii. | Management Studies | 03 |
| iii. | Professional Ethics and Human Values | 02 |
| | **Total** | **10** |
| **(c)** | **Allied Engineering Courses (AEC)** | **08** |
| **(d)** | **Open Elective Course (OEC)/ Departmental Elective Courses (DEC)/ Generic Elective courses (GEC)** | **32-28** |
| | **Grand Total** | **126** |

**Course Coding**

A course is identified by a course code designated by a string of alpha-numeric characters and a course title. In a course code, first letter 'C' imply continuing education the next two letters of the string indicate the Academic Department/Program code offering the course and the last three numbers designate particular course number.

**Course Number**

For all the courses, the first digit corresponds to the level (year) at which a course is normally offered. The last two digits denote the number of the course, which will usually be odd for courses offered in the Odd Semester and even for courses in the Even Semester. For example, the course, "Network Analysis and Synthesis, offered

to Electrical Engineering students in second year Odd Semester' is numbered as CEE101.

Some examples are given below **'CHU-101 Communication Skills'** refers to a course offered by the Department of Humanities to the students of first year of the B. Tech. (Evening) programs and is offered in the Odd semester, similarly **'CCE-102Engineering Mechanics'** refers to a course offered by the Department of Civil Engineering to the students of first year of the B. Tech. (Evening) programs and is offered in the even semester

| S. No. | Teaching Scheme | | | | Contact Hours/ Week | | | Exam Duration (HR) | | Relative Weights | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Subject Code | Course Title | Subject Area | Credits | L | T | P | TH | P | CWS | PRS | MTE | ETE | PRE |
| 1. | CHU-101 | Communication Skills | HMC | 2 | 2 | 0 | 0 | 3 | 0 | 25 | 0 | 25 | 50 | -- |
| 2. | CCE-102 | Engineering Mechanics | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 25 | 20 | 40 | -- |

**ORDINANCE 5-A**

**1. SHORT TITLE AND COMMENCEMENT:**

(i) This ordinance shall be called the Ordinance 5(A), 2015 meantfor the four-year undergraduate Bachelor of Technology (Evening) program of the Delhi Technological University for batches 2015 onwards.

(ii) This ordinance shall come into force with effect from 01.08.2015.

**2. DEFINITIONS:**

(i) "**Applicant"** shall mean an individual who applies for admission to any undergraduate (UG) B. Tech. (Evening) program of the University.

(ii) **"Academic Centre"** means centre established in the University for running the academic and research activities.

(iii) **"AC" and "Council"** shall mean the Academic Council of the Delhi Technological University.

(iv) **"Academic Program"** includes a program of courses or any other component leading to a Bachelor of Technology (Evening) degree.

(v) **"BoM"** shall mean the Board of Management of the University.

(vi) **"BoS"** means Board of Studies of the concerned Department.

(vii) **"CGPA"** shall mean the Cumulative Grade Point Average.

(viii) **"Coordination Committee"** shall mean the committee of the faculty members involved in a course.

(ix) **"COE"** means Controller of Examinations of the University.

(x) **"Course"** shall mean a curriculum component of the academic program identified by a designated code number, a title and specific credit assigned to it.

(xi) **"Course Coordinator"** shall mean a faculty member who shall have full responsibility for the course; coordinating the work of faculty member(s) involved in that course, including examinations and the award of grades.

(xii) **"DA-UG"** shall mean the Dean Academic (UG).

(xiii) **"Degree"** shall mean the Bachelor of Technology (Evening) degree viz. B. Tech. (Evening) degree of the University as may be approved by the BoM from time to time.

(xiv) **"DOSW"** shall mean the Dean of Students Welfare.

(xv) **"Faculty Advisor"** shall mean a teacher nominated by the department to advise a student on the courses to be taken by him/her and other matters related to the academic program.

(xvi) **"Grade Moderation Committee"** shall mean the committee appointed

by the Board of Studies to moderate grades awarded by the Course Coordinators in different courses in a semester at a given level of a curriculum.

(xvii) **"B. TECH. (EVENING) ENTRANCE EXAMINATION"** shall mean the Entrance Examination for admission to undergraduate {B. Tech. (Evening)} program of the Delhi Technological University.

(xviii) **"GEN"** shall mean the student who is admitted against General category.

(xix) **"OBC"** shall mean the Other Backward Classes as notified by the Government of India / Government of NCT of Delhi from time to time.

(xx) **"PD"** shall mean the persons with disability as specified by the Government of India from time to time.

(xxi) **"Registration"** means registration for course or semester at the start of the semester of any program of the University.

(xxii) **"SC/ST"** shall mean the Scheduled Castes and Scheduled Tribes as notified by the Government of India/Government of NCT of Delhi from time to time.

(xxiii) **"Scheme of Teaching and Examination"** shall mean the scheme of teaching and examination for a branch of study as approved by the BoM.

(xxiv) **"SGPA"** shall mean the Semester Grade Point Average.

(xxv) **"Student"** shall mean a student registered for an undergraduate program for full-time study leading to the Bachelor of Technology (Evening) degree.

(xxvi) **"UG"** shall mean the Under Graduate.

(xxvii) **"UG Program"** shall mean a program of courses and/or any other component leading to the Bachelor of Technology degree (Evening) in a specified discipline/branch.

(xxviii) **"University"** shall mean the Delhi Technological University.

***Note :*** *'He' and 'His' implies 'he / she' and 'his / her', respectively.*

## 3. ORDINANCE:

(i) The University shall offer such UG B. Tech. (Evening) program and of such minimum duration as the BoM may approve on the recommendation of the AC either on its own or on the initiative of a Department / Academic Centre, and / or on the direction of the BoM.

(ii) The procedure for starting a new B. Tech. (Evening) program, temporarily suspending a B. Tech. (Evening) program or phasing out a program shall be such, as may be laid down in the Regulations.

(iii) The minimum entry qualifications and the policy and procedure of admission to B. Tech. (Evening) program shall be such as may be approved by the AC and BoM.

(iv) A B. Tech. (Evening) student shall be required to earn a minimum number of credits through various curricular components like teaching / laboratory courses, seminar, project etc. at the University or at such other institutions as have been approved by the University.

(v) A B. Tech. (Evening) student shall be required to complete all the requirements for the award of the Bachelor of Technology (Evening) degree within such period as may be specified in the Regulations.

(vi) The date of initial registration for the B. Tech. (Evening) program shall normally be the date on which the student formally registers for the first time. This date shall be construed as the date of joining the program for all intents and purposes.

(vii) A B. Tech. (Evening) student shall be required normally to attend every lecture, tutorial and laboratory class. However, for late registration, sickness or other such exigencies, absence may be allowed as provided for in the Regulations.

(viii) A B. Tech. (Evening) student may be awarded such prizes and medals as may be specified in the Regulations in accordance with the directions of the Government of India, Government of NCT of Delhi and / or the decision of the AC / BoM.

(ix) The procedure for the withdrawal from a B. Tech. (Evening) program, rejoining the program, the award of grades and the SGPA / CGPA in the examination and all such matters as may be connected with the running of a program shall be such as may be specified in the Regulations.

(x) The award of the Bachelor of Technology (Evening) degree to an eligible student shall be made in accordance with the procedure laid down in the Regulations.

(xi) Notwithstanding anything contained in the above Ordinances, no Regulations shall be made in contravention of the decision of the AC/BoM in regard to the duration of the program and the number of studentships and the procedure of admission and the percentage of students of various categories, viz. reserved (SC, ST, OBC, PD, NRI, FN, PIO) and unreserved categories. The Regulations for the B. Tech. (Evening) program can be modified / amended from time to time and the same shall be approved by the AC and the BoM.

(xii) In special circumstances, the Chairman of the BoM may, on behalf of the BoM, approve amendment, modification, insertion or deletion of an ordinance(s), which in his opinion is necessary or expedient for the smooth running of a program, provided that all such changes shall be reported to the BoM in its next meeting for ratification.

## REGULATIONS

**R.1 Short Title and Commencement:**

(i) These Regulations shall be called the Regulations, 2015 for the four-year undergraduate Bachelor of Technology (Evening) degree program of the Delhi Technological University.

(ii) These Regulations shall come into force with effect from 01.08.2015.

**R.2 Undergraduate Programs:**

(i) The University may offer such undergraduate programs leading to Bachelor of Technology i.e B. Tech. (Evening) degree(s) as may be approved by the AC and the BoM.

(ii) The list of currently offered B. Tech. (Evening) programs and the broad course structure are given in ***Table-1 and Annexure 'A'***. The structure of a program may be amended / modified in accordance with the decision of the AC / BoM.

(iii) The duration of UG programs leading to degrees of B. Tech. (Evening) is normally four years. However, the maximum duration for the UG program for the degree of B. Tech. (Evening) is seven years from the date of initial registration. The maximum duration of the program includes the period of withdrawal, absence and different kinds of leaves permissible to a student, but it shall exclude the period of rustication. The duration for the UG program may be altered in accordance with the decision of the AC / BoM.

**R.3 Board of Studies (BoS):**

The Board of Studies (BoS) shall be a sub-committee of the AC, which shall consider all the academic matters related with the Department. It shall also consider and recommend to the AC the broad framework and policies related to the UG programs offered by the University. The composition of BoS of the department shall be as follows: - Head of the Department (Chairman), all Professors of the department (Members), two experts appointed by Vice Chancellor (Members) and two Associate Professors of the department by rotation (Members) for a period of two years.

**R.4 Phasing out of a Program:**

The phasing out of any B. Tech. (Evening) program may be considered by the AC on the recommendation of the BoS. Also, a program may be phased out by the AC if, consecutively for three years, the number of students registering for the program is less than 40% of the sanctioned intake of the students.

**R.5 Starting a New Program:**

(i) The BoM may approve the starting of a new program or a modified program in lieu of the old phased-out program on the recommendation of the BoS and the AC.

(ii) A new program may be considered and recommended by the AC to the BoM for its consideration and approval. Such a proposal will be initiated by a Department through its BoS.

**R.6 Semester System:**

(i) The academic programs in the University shall be based on semester system; Odd and Even semesters in a year with winter and summer vacations. A number of courses shall be offered in each semester.

(ii) Each course shall have a certain number of credits assigned to it depending upon the academic load of the course assessed on the basis of weekly contact hours of lecture, tutorial and laboratory classes, assignments or field study or self study.

**R.7 Admissions:**

Admission to all Under Graduate B. Tech. (Evening) Programs shall be made through the B. Tech. (Evening) Entrance Examination. The policy of admissions, the eligibility thereof and other issues pertaining to the said entrance shall be such as may be approved by AC / BoM

**R.8 Allotment of Branch Program:**

The allotment of branch to a student shall be made strictly according to the eligibility, as per the ranking in the B. Tech. (Evening) entrance examination of the student and the availability of seats.

**R.9 Academic Registration:**

Every student shall be required to register in each semester on the scheduled date as per academic calendar of the University till the completion of the degree. If the student

does not register on scheduled date he/she has to pay late registration fee notified from time to time upto a maximum of 10 working days. Registration in absentia may be permitted by the Dean Academic (UG). In absentia registration may be allowed only in rare cases such as illness or any other contingencies, at the discretion of the Dean Academic (UG).

**R.10 Subject Registration:**

(i) Every student shall be required to register for the courses that he / she wants to study for earning credits and his/her name will appear in the roll list of each of these courses. No credit shall be given if a student attended a course of which he or she has not registered. The performance of a student in all the courses, for which he/she has registered, shall be included in his / her grade card(s).

(ii) Student should first register for the courses in which he / she has been declared failed in the previous year / semester and then register for the remaining courses of the semester to make up the total required credits for that semester. However, a student shall not be allowed to register for the courses offered to students of third year, if he / she has not cleared all the courses of first year and a student shall not be allowed to register for the courses offered to students of fourth year, if he / she has not cleared all the courses of second year.

(iii) Those students who are joining the first year of the B. Tech. (Evening) program shall complete the registration procedure on a specified registration date as per academic calendar/schedule notified from time to time.

(iv) A student may normally register for a minimum of 16 credits and a maximum of 32 credits. In case the student is not allowed to register the courses of current semester due to backlog of course(s) of previous year(s), he / she may register for credits less than 16 depending on number of backlog of course(s) of previous year(s).

(v) A student shall have the option to add or delete courses from his / her registration during the first ten days of the semester as per Academic Calendar.

**R.11 Program Advisor:**

A Program Advisor shall be appointed by the Head of the Department for each program who will advise the students for registration.

**R.12 Course Coordinator:**

Every course / subject offered by a Department shall be coordinated by a Course Coordinator appointed by the Head of the Department. The Course Coordinator shall have full responsibility for the course. He / she shall coordinate the work of other faculty members involved in that course in respect of their participation in various activities related to the course including continuous evaluation of the students through tests, quizzes, assignments, Mid-Term and End-Term Examination and the award of the grades.

**R.13 Minimum Number of Students Required for an Elective Course:**

An elective course in a Department shall run only if a minimum of 20 numbers of students register for it in a semester. However, the minimum number of students may be 15 in case the strength of the batch of students in the particular department depletes below 40. Similarly aOpenElective Course shall run only for a minimum number of 40 students.

**R.14 Course Code:**

Each course offered by the University shall be identified by a course code, normally consisting of a string of six alpha-numeric characters followed by a course title. The first character ‘C’ imply continuing education and the next two characters in a course code in capital letters identifying the responsible Academic Department offering the course. The next three characters are numerical digits: the first one normally specified the year of study and the last two digits specify the course number and the semester in which the course shall be offered. Normally odd number in the course code will indicate that the course will be offered in the odd-semester and the even number will indicate that the course will be offered in the even-semester of the year. For B. Tech.

(Evening) programs normally, 100 series shall be for the courses in first year 200 for the courses in the second year and so on.

**R.15 Course Credits:**

Each course shall have an integer number of credits, which reflects its weight. The number of credits of a course in a semester shall ordinarily be calculated as under:

(i) Lectures/Tutorial: One lecture hour per week shall normally be assigned one credit. One hour of tutorial per week shall be assigned one credit. However, the credits may be adjusted further by taking into consideration the quantum of work required to be put in by a student for learning the course having two/three hours of contact every alternate week shall have one credit only.

(ii) Practicals: One laboratory hour per week shall normally be assigned half a credit. Not more than three credits may be assigned to a practical course having only laboratory component. The courses having two/three hours of contact every alternate week shall have one credit only.

**R.16 Course Evaluation:**

(i) A student shall be evaluated for his / her academic performance in a course through tutorials, practicals, home work, assignments, term papers, field work, seminars, quizzes as Class Work Sessionals (CWS) and Practical Sessional (PRS), Mid-Term Examination (MTE), End-Term Examination (ETE) and Practical Examination (PRE) as applicable according to the guidelines formulated by the AC.

(ii) The distribution of weights for each component shall be announced by the course Coordinator at the beginning of the course, subject to such stipulations as are given in the Scheme of Teaching and Examination for a given program.

(iii) The criteria for continuous evaluation of any subject be declared in the very first week of commencement of the classes.

(iv) Answer sheets of the test(s) and examination(s) cannot be written in pencil.

(v) Evaluation of Answer sheets(s) should not be in pencil.

(vi) A student can go through his / her answer sheets(s) of MTE and the ETE and point out any discrepancy in its evaluation on a day fixed by the Course Coordinator/ Chairman, Grade Moderation Committee. Objections will be entertained right then, and not even on the next day.

(vii) Head of Departments will ensure that end term examination answer sheets are shown to the students before the day of moderation, on a date to be specified and prominently displayed by the respective teachers. Further, the answer sheets be preserved by the Examination Branch for six months, before handing over to departmental stock for disposal.

(viii) The answer sheets of the End-Term Examination shall not be shown to a student after finalization of the grades by the Grade Moderation Committee.

(ix) The project shall be evaluated normally by Mid-Term seminar(s), quality of work carried out, project report submitted and the viva-voce examination.

**R.17 Conduction of Examination:**

(i) Each faculty member shall prepare and type/set his/her question paper for Mid-term and End-term Examinations after their recommendation by BoS of the concerned department and appointed by the Vice Chancellor. The typed soft copy shall be handed over to In-charge of the Examination Cell. After the question paper is formatted the same will be scrutinized by the paper setter for corrections. The Examination Cell shall prepare the sufficient number of copies of the paper and the In-charge of the Examination Cell shall deliver to the Superintendent of Examinations in sealed envelope 45 minutes prior to conduct of the particular examination.

(ii) Mid-Term Examination will be conducted by course coordinator and the faculty members concern during the slot notified by the Controller of Examinations.

(iii) While the paper is set, the Mid-Term Examination papers will not have any alternative, however 20-30% alternatives may be admissible in the End-Semester Examination paper.

(iv) The End-Term Examination will be conducted through Superintendent of Examinations, appointed by Vice Chancellor, DTU from time to time.

(v) The evaluation of answer sheets for Mid-Term and End-Term Examination of B. Tech. (Evening) students shall be done in a de-centralized manner by the concerned examiners.

(vi) Evaluation process should be concluded within specified days from the end of the schedule of examination:

Mid Term Examination – One week

End Term Examination – Two weeks

(vii) A notification of slot / date / venue be issued by concerned faculty member under intimation to Controller of Examinations for showing answer sheets to the students. Both Mid-Term & End-Term answer sheets should be shown to the students by the concerned faculty members.

(viii) Policy adopted by individual faculty member for evaluation of answer sheets should be uniform and consistent, and in case any moderation is done for the marks the same should uniformly be applied under intimation to Controller of Examinations.

**R.18 Grading System:**

(i) The academic performance of a student shall be graded on a 10-point scale as per the guidelines given in ***Annexure-B***. The letter grades and their equivalent grade points are listed in ***Table-4***.

(ii) The letter grades awarded to a student in all the courses shall be converted into a semester and cumulative performance index called the Semester Grade Point Average (SGPA) and Cumulative Grade Point Average (CGPA), to be calculated by the procedures given in ***Annexure-B*** of these Regulations.

(iii) At the end of the program, a student with CGPA of 8.5 and above shall be awarded ‘First Division with Distinction’ and a student with CGPA between 6.75 and 8.5 shall be awarded “First Division”.

(iv) All the passing out students of a class shall be given ranks as **"Rank XXX in a class of YYY Students".**

**R.19 Grade Moderation Committee:**

The BoS of academic department(s) will constitute the Grade Moderation Committee for all the Academic Courses under its purview. The Head of the Department shall be the Chairman of the committee, and other members shall consist of 2 Professors of the department, 2 Associate Professors of the department and 2 Assistant Professors of the department. This committee shall be responsible for adherence to the guidelines for the award of grades and shall include all the concerned Course Coordinators. The Chairman, Grade Moderation Committee shall be responsible for the display of grades in the department and for forwarding the final grades to the Controller of Examinations. The Chairman, Grade Moderation Committees shall also retain the record-copies of the marks and the grades along with the statistical parameters for all the courses moderated. The general guidelines for the moderation of grades are given in ***Annexure-C***. One copy of distribution of marks and the question paper will be sent to the Controller of Examinations along with grades by the Department.

**R.20 Scrutiny of Grades, Tabulation and Declaration of Results:**

(i) A student may apply for scrutiny of grades to the Chairman, BoS, within three days from the scheduled date of display of grades. A committee consisting of the Dean Academics (UG), the concerned Chairman of the Grade Moderation Committee and the Course Coordinator may check the entry of the weights from different components of evaluation and their addition. The results of scrutiny may lead to either a change in grade due to mistake(s) in any of the aspects scrutinized by the committee or the grade may remain unchanged. The results will be intimated to the Controller of Examinations within three days from the date of receiving the application in the department as per academic calendar.

(ii) In exceptional circumstances the grade(s) of a student or a number of students may be scrutinized by a committee constituted by the VC.

(iii) The Controller of Examinations shall organize the tabulation of grades and declaration of results. CoE shall be the custodian of records related to examination and results.

**R.21 Unfair Means:**

In case a student is found adopting or suspected of adopting unfair means before, during or after the examination, or lifting or copying of work(s) of someone else and inserting it in his class work submissions, Project, Dissertation etc. without proper acknowledgement, credit and reference, such penal action shall be taken by the University against the student as may be necessary and adequate to uphold the sanctity and integrity of the examination system and the credibility of the University. The general instructions for penal action for use of unfair means are given in ***Annexure D***.

(i) All the cases regarding use of unfair means practices in the examinations shall be reported and placed before the 'Unfair Means Scrutiny Committee". The Controller of Examinations shall convene the Unfair Means Scrutiny Committee from time to time as per the requirements.

(ii) The Unfair Means Scrutiny Committee shall be constituted as under:

| | | |
|---|---|---|
| a) | Dean Academic (UG) | Chairman |
| b) | Dean Academic (PG) | Member |
| c) | Dean of Students Welfare | Member |
| d) | Head of the concerned Department | Member |
| e) | AR Academic UG) | Member |
| f) | Controller of Examinations | Convener |

(iii) For Project, Class Work Submission, Mid-Term Examination etc., the Course Coordination Committee may report the matter to the BoS. The BoS may after considering the matter reported to it and after giving an opportunity to the concerned student(s) to explain his/her conduct impose appropriate penalty, including the award of grade in the concerned course(s) on the concerned students(s).

**R.22 Attendance, Absence, Leave and Withdrawals:**

(i) All the students of B. Tech. (Evening) program are expected to attend every lecture, tutorial, practical or drawing class scheduled for them.

(ii) The students of B. Tech. (Evening) must have a minimum attendance of 75% of the total number of classes including lectures, tutorials and practicals, held in a subject in order to be eligible to appear at the End-Term Examination for that subject.

(iii) The Dean Academic (UG), authorized by the Vice Chancellor for this purpose may relax the minimum attendance upto 10% for reasons to be recorded. This relaxation may be granted on production of documents showing that the student was either busy in the authorized activities or suffering from any disease. The student should submit these documents to the Course Coordinator and Chairman, BoS within seven days of resuming the studies.

(iv) Under exceptional circumstances, the Vice Chancellor may further relax the minimum attendance upto 5%.

(v) Attendance of the students shall be monitored and displayed during a semester as per the guidelines approved by the AC / BoM. The guidelines for monitoring the attendance of the students are given in ***Annexure E***.

(vi) The names of the students whose attendance is less than 75% {subject to the relaxation mentioned in 22 (iii) and /or 22 (iv)} in the classes held in a course will be intimated by the Course Coordinator on the last teaching day, to the Chairman, BoS, who will consolidate the list for all such students for all the courses of a given yearly level of a program and display it on the notice board of the Department. The list of such students shall also be forwarded to the CoE. These students shall not be allowed to appear in the End-Term Examination of that course and shall be awarded the grade 'F' irrespective of their performance in Class Work Sessional (CWS) / Mid-Term Examination (MTE) etc.

**R.23 Make-up Examination on Medical / Extra Ordinary Ground:**

(i) Students who have missed the Mid-Term Examination for valid reasons (***Annexure F***) may become eligible for a Make-up Examination subject to the permission given by the Dean Academic (UG) on the clear cut recommendations of Chairman, BoS considering the merit of the case. It may be given to the deserving students. The student should make an application to the Dean Academic UG, through Chairman, BoS, within ten working days from the date of the examination missed, explaining the reasons for his / her absence. Applications received after this period will not be entertained. Further, there will be no make-up of the Make-up Examination.

(ii) If a student is absent during End-Term Examination of a course due to medical reasons or other special circumstance (***Annexure F***), he /she may apply for the award of 'I' grade to the Chairman, BoS of the concerned department offering the course, through the Course Coordinator, Make-up Examination will be allowed only if a student has not been disqualified earlier, due to shortage of attendance. The Chairman, BoS may forward this request to Dean Academic (UG) and COE. Make-up Examination shall be normally held along with the Supplementary Examination of End-Term Examination to convert 'I' grade to proper letter grade.

**R.24 Supplementary Examination:**

(i) Supplementary Examination in any course(s) shall be permissible only in the semester(s) in which the course(s) is/are run. Supplementary Examination will be held during vacations or latest by one month of the commencement of the next semester, which will be announced by Dean Academic (UG).

(ii) A student will carry the marks obtained by him/her in the Mid-Term Examination, Practical Examination and Sessional.

(iii) Students will be awarded marks as per the performance in Supplementary exam. Accordingly, grades will be awarded on the basis of performance of the student in Supplementary exam and Table- 6 of Absolute marks system.

(iv) Supplementary Examination will be allowed only if a student has not been disqualified earlier, either due to shortage of attendance or use of unfair means.

**R.25 (a) Withdrawal from Course:**

A student who wants to withdraw from a course shall apply through the Chairman, BoS to the Dean Academic (UG), on a prescribed form within one week from the end of the Mid-Term Examination under the advice of his/her Program Advisor. If his / her request for withdrawal is granted, it will be recorded in the registration record of the student and the concerned Course Coordinator will be informed about it. The student will be awarded a withdrawal grade at the end of the semester.

**(b) Semester Withdrawal:**

In case a student is unable to attend classes for more than four weeks in a semester he / she may apply to the Dean Academic (UG) through Chairman, BoS, for withdrawal from the semester, which shall mean withdrawal from all the registered courses in the semester. However, such application shall be made under the advice of the program advisor, as early as possible and latest before the start of the End-Term Examination. Partial withdrawal from the semester shall not be allowed.

**(c) Semester Withdrawal on Medical Grounds:**

(i) In case the period of absence on medical grounds is more than twenty working days during the semester, a student may apply for withdrawal from the semester, if he /she so desires. But as per provisions of section 25(b) application must be made to the Dean Academics (UG) through Chairman, BoS under the advice of the Program Advisor, as early as possible and latest before the beginning of End-Term Examination.

(ii) Any application on medical grounds shall be accompanied with a medical certificate from University doctor/Medical Officer. A certificate from a registered medical practitioner containing the registration number may also be accepted in those cases where a student is normally residing off-campus or becomes ill while away from the University.

**(d) Rustication/Suspension/ Withdrawal from a Semester/year:**

A student rusticated from the University or suspended or debarred from the classes due to any reason whatsoever or having withdrawn from a semester/year on medical grounds, shall have to meet the requirement of 75% attendance in each course in a semester and shall have to complete the program within its maximum time limit of seven years for 4 year B. Tech. (Evening) program as specified in Regulations excluding the period of expulsion, if any.

**R.26 Termination of Enrolment:**

**(i) Due to Absence:**

If a student registered in the first year of the program is continuously absent from the classes for more than four weeks without informing the Course Coordinators, the Coordinator shall immediately bring it to the notice of Chairman, BoS, of the concerned department for informing the Dean Academic (UG). The names of such students shall be removed from the University rolls and such absence during first year will render the student ineligible for re-admission.

**(ii) On Academic Grounds:**

(a) The student who has earned not more than 6 credits at the end of first semester shall be given a warning for his/her poor performance by Dean Academic (UG). The enrolment of a student in a program shall stand terminated if he/she fails to earn 12 credits at the end of first year. The communication regarding termination of enrolment shall be issued by the Dean Academic (UG) within 15 days from the date of declaration of results.

(b) The duration of the B. Tech. (Evening) program is 4 years i.e. 8 semesters. The enrolment of a student will stand cancelled at the end of 7 years from the date of initial registration in the first semester.

(c) A student whose enrolment has been terminated may appeal to the Vice Chancellor for reconsideration within fifteen days from the date of issuance

of the communication of termination and the appeal will be disposed off within fifteen days. If the appeal is allowed, his/her registration and enrolment shall be restored.

**R.27 Earned Minimum Credits and Minimum CGPA for the Degree:**

(i) The credits for the courses in which a student has obtained 'P' (minimum passing grade for a course) grade or higher shall be counted as Credit earned by him/her. A student who has a minimum CGPA of 5.0 and earned the required number of credits as specified in the B. Tech. (Evening) curriculum he / she is registered for, is eligible for the award of the respective degree.

(ii) A student who has earned the minimum credits required for a degree but fails to obtain the minimum specified CGPA for this purpose, shall be allowed to register in course(s) till the minimum CGPA is attained within the maximum time limit for different programs.

**R.28 Interpretation of Regulations:**

In case of any dispute, difference of opinion in interpretation of these Regulations or any other matter not covered in these Regulations, the decision of the Chairman, AC shall be final and binding.

**R.29 Emergent Cases:**

Not withstanding anything contained in the above Regulations, the Chairman of the AC may, in emergent situation, take such action including insertion, suspension or modification of any Regulation(s) on behalf of the AC as he/she deems appropriate and report it to the next meeting of the AC for its approval.

**ANNEXURE-A**

# Course Structure for B. Tech. (Evening) Program

## FIRST YEAR

| First Semester | | | |
|---|---|---|---|
| **S.No.** | **Subject** | **Credits** | **Category** |
| 1. | Allied Engineering Course-1 | 4 | AEC |
| 2. | Department Core Course-1 | 4 | DCC |
| 3. | Engineering Analysis and Design | 4 | DCC |
| 4. | Communications Skills | 2 | HMC |
| | **Total** | **14** | |
| **Second Semester** | | | |
| **S.No.** | **Subject** | **Credits** | **Category** |
| 1. | Allied Engineering Course-2 | 4 | AEC |
| 2. | Department Core Course-2 | 4 | DCC |
| 3. | Department Core Course-3 | 4 | DCC |
| 4. | Management Studies Course | 3 | HMC |
| | **Total** | **15** | |

## SECOND YEAR

| Third Semester | | | |
|---|---|---|---|
| **S.No.** | **Subject** | **Credits** | **Category** |
| 1. | Department Core Course-4 | 4 | DCC |
| 2. | Department Core Course-5 | 4 | DCC |
| 3. | Department Core Course-6 | 4 | DCC |
| 4. | Humanities & Social Science Course | 3 | HMC |
| | **Total** | **15** | |

| Fourth Semester | | | |
|---|---|---|---|
| **S.No.** | **Subject** | **Credits** | **Category** |
| 1. | Department Core Course-7 | 4 | DCC |
| 2. | Department Core Course-8 | 4 | DCC |
| 3. | Department Core Course-9 | 4 | DCC |
| 4. | Professional Ethics and Human Values | 2 | HMC |
| | **Total** | **14** | |

## THIRD YEAR

| Fifth Semester | | | |
|---|---|---|---|
| **S.No.** | **Subject** | **Credits** | **Category** |
| 1. | Department Core Course | 4 | DCC |
| 2. | Department Core Course/Department Elective Course | 4 | DCC/DEC |
| 3. | Department Elective Course | 4 | DCC/DEC |
| 4. | Open Elective Course | 3 | OEC |
| | **Total** | **15** | |
| **Sixth Semester** | | | |
| **S.No.** | **Subject** | **Credits** | **Category** |
| 1. | Department Core Course | 4 | DCC |
| 2. | Department Elective Course/ Department Core Course | 4 | DEC/ DCC |
| 3. | Department Elective Course | 3 | DEC |
| 4. | Department Elective Course | 4 | DEC |
| | **Total** | **15** | |

## FOURTH YEAR

| Seventh Semester | | | |
|---|---|---|---|
| **S.No.** | **Subject** | **Credits** | **Category** |
| 1. | Department Core Course | 4 | DCC |
| 2. | Department Core Course | 4 | DCC |
| 3. | Department Elective Course | 3 | DEC |
| 4. | Department Elective Course | 4 | DEC |
| 5. | B.Tech. Project | 4 | DCC |
| | **Total** | **19** | |
| **Eighth Semester** | | | |
| **S.No.** | **Subject** | **Credits** | **Category** |
| 1. | Department Core Course-4 | 4 | DCC |
| 2. | Department Elective Course | 4 | DEC |
| 3. | Department Elective Course | 3 | DEC |
| 4. | B.Tech. Project (Contd. From VII semester) | 8 | DCC |
| | **Total** | **19** | |

The Annexures and Tables referred to in the Ordinance and Regulations 5-A are same as given in the Annexures and Tables in the Ordinance and Regulations 1-A.

# SECTION-D

## Academic Departments
## and
## Schemes of Teaching and Examination

- Department of Applied Chemistry
- Department of Applied Mathematics
- Department of Applied Physics
- Department of Bio-Technology
- Department of Civil Engineering
- Department of Computer Science and Engineering
- Department of Electrical Engineering
- Department of Electronics & Communication Engineering
- Department of Environmental Engineering
- Department of Humanities
- Department of Information Technology
- Department of Mechanical Engineering
- Department of Training & Placement
- Delhi School of Management

# DEPARTMENT OF APPLIED CHEMISTRY

The department aims to provide state-of-art knowledge and practical skills to the UG and PG students in the diverse subjects of Applied Chemistry, Polymer Science and Chemical Technology. Facilitating R&D activities at UG level is the prime concern. Innovations in chemistry and polymers are focused to provide green technologies and products to global industries. New molecules for improving human health and medical care, hydrogels for improved agri- products, innovative polyfibrils for clean water, specialty polymers for solar and biosensor technology, nano-embedded and green-polymers for food packaging are some of the main areas in which our PG and doctoral students are excelling beyond imagination.

The department offers following academic programs:

| S. No. | Name of academic Program | Intake | Duration |
|---|---|---|---|
| 1 | B.Tech. in Polymer Science & Chemical Technology | 60 | 4 years |
| 2 | M.Tech. in Polymer Technology | 20(FT) + 10(PT) | 2 years |
| 3 | Ph.D. Degree program (Both Full time and Part time) | APR | 3 years minimum |

In addition, the department provides fundamental knowledge of Applied Chemistry to all the first year engineering students of B.Tech. Degree and also offers large numbers of Elective Courses for the final year students of all the branches of B.Tech. Degree programs. Both B. Tech. & M.Tech courses are interdisciplinary and highly industry oriented. A large number of its alumni are occupying prestigious positions in India and abroad. The department has undertaken and completed successfully large numbers of research and industry projects funded by AICTE, CSIR, UGC, DRDO, DST, BARC

etc. Active national and international collaborations for R&D activities in different fields have been established by the department. More than 60 students have already completed their Ph.D. degree. The faculty members and students of the department have published over 600 research papers in national and international journals of high impact factors. The faculty members of the department have also published books in various fields of chemistry and polymers. The faculty members supervise Ph.D. and UG/PG projects in: Pharmaceutical Chemistry, Medicinal Chemistry, Bio-nano-interface, Bioactive Glasses, Bio-active agents, Wound Dressings, Hydrogels, Polyureathane Foams, Conducting Polymers, Organic/ Polymer Solar Cells, etc.

The department has 17 well-established laboratories. The main laboratories are: Applied Chemistry, Polymer Chemistry, Polymer Testing & Characterization, Polymer Processing, Chemical Technology, Chemical Reaction Engineering, Instrumentation, Heat Transfer, Mass Transfer, Fibre Technology, Computer Aided Design and Research Labs. All UG/PG students and Research Scholars carry out their projects in these laboratories jointly with experts from industry and teachers of the department.

The department conducts annual technical festival TATVA in which the students and experts from industry participate in academic deliberations to enhance Industry-academic interactions. In addition, department also undertakes consultancy projects with various industries.

The department also has Students Chapters of industry oriented professional bodies viz., Indian Plastics Institute (IPI) and Indian Institute of Chemical Engineers (IIChE). Invited talks of experts from Industry and Academia are regularly arranged for the students.

The department is planning to introduce M.Sc. (Chemistry) program and also to establish the following facilities:

1. State-of-art Central Instrumentation Facility for R&D
2. Test facilities for polymers products to generate revenue for the university

## BACHELOR OF TECHNOLOGY (POLYMER SCIENCE & CHEMICAL TECHNOLOGY)

### I Year: First Semester

| Teaching Scheme | | | | | Contact Hours/Week | | | Exam Duration (h) | | Relative Weights (%) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| S. No. | Subject Code | Course Title | Subject Area | Credit | L | T | P | Theory | Practical | CWS | PRS | MTE | ETE | PRE |
| **Group A** | | | | | | | | | | | | | | |
| 1 | MA101 | Mathematics - I | ASC | 4 | 3 | 1 | 0 | 3 | 0 | 25 | - | 25 | 50 | - |
| 2 | AP101 | Physics – I | ASC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 3 | AC101 | Chemistry | ASC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 4 | ME101 | Basic Mechanical Engineering | AEC | 4 | 4 | 0 | 0 | 3 | 0 | 25 | - | 25 | 50 | - |
| 5 | ME103 | Workshop Practice | AEC | 2 | 0 | 0 | 3 | 0 | 3 | - | 50 | - | - | 50 |
| 6 | HU101 | Communication Skills | HMC | 3 | 3 | 0 | 0 | 3 | 0 | 25 | - | 25 | 50 | - |
| | **Total** | | | **21** | 16 | 1 | 7 | | | | | | | |
| **Group B** | | | | | | | | | | | | | | |
| 1 | MA101 | Mathematics - I | ASC | 4 | 3 | 1 | 0 | 3 | 0 | 25 | - | 25 | 50 | - |
| 2 | AP101 | Physics – I | ASC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 3 | EE101 | Basic Electrical Engineering | AEC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 4 | CO101 | Programming Fundamentals | AEC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 5 | ME105 | Engineering Graphics | AEC | 2 | 0 | 0 | 3 | 0 | 3 | - | 50 | - | - | 50 |
| 6 | EN101 | Introduction to Environmental Science | AEC | 3 | 3 | 0 | 0 | 3 | 0 | 25 | - | 25 | 50 | - |
| | **Total** | | | **21** | 15 | 1 | 9 | | | | | | | |

## I Year: Second Semester

| Teaching Scheme | | | | | Contact Hours/ Week | | | Exam Duration | | Relative Weights (%) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| S. No. | Subject Code | Course Title | Subject Area | Credit | L | T | P | Theory | Practical | CWS | PRS | MTE | ETE | PRE |
| **Group A** | | | | | | | | | | | | | | |
| 1 | MA102 | Mathematics-II | ASC | 4 | 3 | 1 | 0 | 3 | 0 | 25 | - | 25 | 50 | - |
| 2 | AP102 | Physics – II | ASC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 3 | EE102 | Basic Electrical Engineering | AEC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 4 | CO102 | Programming Fundamentals | AEC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 5 | ME102 | Engineering Graphics | AEC | 2 | 0 | 0 | 3 | 0 | 3 | - | 50 | - | - | 50 |
| 6 | EN102 | Introduction to Environmental Science | AEC | 3 | 3 | 0 | 0 | 3 | 0 | 25 | - | 25 | 50 | - |
| | **Total** | | | **21** | 15 | 1 | 9 | | | | | | | |
| **Group B** | | | | | | | | | | | | | | |
| 1 | MA102 | Mathematics-II | ASC | 4 | 3 | 1 | 0 | 3 | 0 | 25 | - | 25 | 50 | - |
| 2 | AP102 | Physics – II | ASC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 3 | AC102 | Chemistry | ASC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 4 | ME104 | Basic Mechanical Engineering | AEC | 4 | 4 | 0 | 0 | 3 | 0 | 25 | - | 25 | 50 | - |
| 5 | ME106 | Workshop Practice | AEC | 2 | 0 | 0 | 3 | 0 | 3 | - | 50 | - | - | 50 |
| 6 | HU102 | Communication Skills | HMC | 3 | 3 | 0 | 0 | 3 | 0 | 25 | - | 25 | 50 | - |
| | **Total** | | | **21** | 16 | 1 | 7 | | | | | | | |

## II Year: Third Semester

| S.No. | Code | Title | Area | Cr | L | T | P | TH | PH | CWS | PRS | MTE | ETE | PRE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. | EC271 | Basic Electronics Engg. | AEC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 2. | PT201 | Principles of Polymerization | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 3. | PT203 | Elements of Chemical Engg. | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 4. | PT205 | Chemical Engineering Thermodynamics | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 5. | PT207 | Engineering Analysis and Design | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 6. | MG201 | Fundamentals of Management | HMC | 3 | 3 | 0 | 0 | 3 | - | 25 | - | 25 | 50 | - |
| | | **Total** | | **23** | | | | | | | | | | |

## II Year: Fourth Semester

| S.No. | Code | Title | Area | Cr | L | T | P | TH | PH | CWS | PRS | MTE | ETE | PRE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. | EE282 | Instrumentation and Control | AEC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 2. | PT202 | Fluid Mechanics | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 3. | PT204 | Polymer Processing | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 4. | PT206 | Polymer Structure and Properties | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 5. | PT208 | Chemical Reaction Engg. | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 6. | HU202 | Engineering Economics | HMC | 3 | 3 | 0 | 0 | 3 | - | 25 | - | 25 | 50 | - |
| | | **Total** | | **23** | | | | | | | | | | |

## III Year: Fifth Semester

| S.No. | Code | Title | Area | Cr | L | T | P | TH | PH | CWS | PRS | MTE | ETE | PRE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. | PT301 | Heat Transfer | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 2. | PT303 | Polymer Processing Techniques | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 3. | PT3xx | Departmental Elective Course-1 | DEC/ GEC | 4 | 3 | 0/ 1 | 2/0 | 3 | 0 | 15/ 25 | 15/- | 30/ 25 | 40/ 50 | - |
| 4 | PT3xx | Departmental Elective Course-2 | DEC/ GEC | 4 | 3 | 0/ 1 | 2/0 | 3 | 0 | 15/ 25 | 15/- | 30/ 25 | 40/ 50 | - |
| 5. | UExxx | Open Elective Course | OEC | 3 | 3 | 0 | 0 | 3 | 0 | 25 | - | 25 | 50 | - |
| 6. | HU301 | Technical Communication | HMC | 2 | 2 | 0 | 0 | 3 | - | 25 | - | 25 | 50 | - |
| | | **Total** | | **21** | | | | | | | | | | |

## III Year: Sixth Semester

| S.No. | Code | Title | Area | Cr | L | T | P | TH | PH | CWS | PRS | MTE | ETE | PRE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. | PT302 | Rubber Technology | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 2. | PT304 | Mass Transfer | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 3. | PT306 | Plastic Technology | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 4. | PT3xx | Departmental Elective Course-3 | DEC/ GEC | 4 | 3 | 0/ 1 | 2/0 | 3 | 0 | 15/ 25 | 15/- | 30 /25 | 40/ 50 | - |
| 5. | PT3xx | Departmental Elective Course-4 | DEC/ GEC | 4 | 3 | 0/ 1 | 2/0 | 3 | 0 | 15/ 25 | 15/- | 30 /25 | 40/ 50 | |
| 6. | HU304 | Professional Ethics and Human values | HMC | 2 | 2 | 0 | 0 | 3 | - | 25 | - | 25 | 50 | - |
| | | **Total** | | **22** | | | | | | | | | | |

## IV Year: Seventh Semester

| S.No. | Code | Title | Area | Cr | L | T | P | TH | PH | CWS | PRS | MTE | ETE | PRE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. | PT401 | B. Tech Project-I | DCC | 4 | | | | | | | | | | |
| 2. | PT403 | Training Seminar | DCC | 2 | | | | | | | | | | |
| 3. | PT405 | Fibre Technology | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 4. | PT407 | Chemical Process Technology | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 5. | PT4xx | Departmental. Elective Course - 5 | DEC/ GEC | 4 | 3 | 0/ 1 | 2/ 0 | 3 | 0 | 15/ 25 | 15/- | 30/ 25 | 40/ 50 | |
| 6. | PT4xx | Departmental. Elective Course - 6 | DEC/ GEC | 4 | 3 | 0/ 1 | 2/ 0 | 3 | 0 | 15/ 25 | 15/- | 30/ 25 | 40/ 50 | |
| | | **Total** | | **22** | | | | | | | | | | |

## IV Year: Eighth Semester

| S.No. | Code | Title | Area | Cr | L | T | P | TH | PH | CWS | PRS | MTE | ETE | PRE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. | PT402 | B. Tech Project-II | DCC | 8 | | | | | | | | | | |
| 2. | PT404 | Polymer Product and Die Design | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 3. | PT4xx | Departmental. Elective Course-7 | DEC/ GEC | 4 | 3 | 0/ 1 | 2/ 0 | 3 | 0 | 15/ 25 | 15/- | 30/ 25 | 40/ 50 | |
| 4. | PT4xx | Departmental Elective Course-8 | DEC/ GEC | 4 | 3 | 0/ 1 | 2/ 0 | 3 | 0 | 15/ 25 | 15/- | 30 / 25 | 40/ 50 | |
| | | **Total** | | **20** | | | | | | | | | | |

## List of Departmental Electives Courses

| S. No. | Sub. Code | Course Title | DEC detail |
|---|---|---|---|
| 1. | PT-305 | Process Equipment Design | DEC – 1 & 2 |
| 2. | PT-307 | Optimization Techniques | |
| 3. | PT-309 | Petroleum Refining Engineering | |
| 4. | PT-311 | Renewable & Non-renewable energy | |
| 5. | PT-313 | Combustion Engineering | |
| 6 | PT-315 | Packaging Technology | |
| 7 | PT-317 | Polymer Coatings & Adhesives | |
| 8 | PT-319 | Biomaterials | |
| 9 | PT-321 | Biosensor Technology | |
| 10 | PT-323 | Biochemical Engineering | |
| 11 | PT-308 | Advanced Chemical Reaction Engineering | DEC – 3 & 4 |
| 12 | PT-310 | Chemical Process Simulation | |
| 13 | PT-312 | Numerical Methods in Chemical Engineering | |
| 14 | PT-314 | CAD in Chemical Engineering | |
| 15 | PT-316 | Corrosion Engineering | |
| 16 | PT-318 | Polymer Blends and Composite | |
| 17 | PT-320 | Polymer Rheology | |
| 18 | PT-322 | Non-Woven Technology | |
| 19 | PT-324 | Application of Nanotechnology in Polymer | |
| 20 | PT-326 | Polymer Reaction Engineering | |
| 21 | PT-409 | Tyre Technology | DEC – 5 & 6 |
| 22 | PT-411 | Thermoplastic Elastomers | |
| 23 | PT-413 | Resins Technology | |
| 24 | PT-415 | Paint Technology | |
| 25 | PT-417 | Footwear Technology | |
| 26 | PT-419 | Plastic and Environment | |
| 27 | PT-421 | Industrial Waste Management | |
| 28 | PT-423 | Polymer Degradation | |
| 29 | PT-425 | Energy Conservation & Recycling | |
| 30 | PT-427 | Safety & Hazards in Chemical Industry | |
| 31 | PT-406 | Speciality Polymers | DEC – 7 & 8 |
| 32 | PT-408 | Colouration Technology | |
| 33 | PT-410 | Membrane Technology | |
| 34 | PT-412 | Inorganic Polymer | |
| 35 | PT-414 | Food Technology | |
| 36 | PT-416 | Process Design and Engineering Economics | |
| 37 | PT-418 | Fertilizer Technology | |
| 38 | PT-420 | Fuel Cell Technology | |
| 39 | PT-422 | Pharmaceutical Technology | |
| 40 | PT-424 | Rocket Propulsion and Explosives | |

# DEPARTMENT OF APPLIED MATHEMATICS

Mathematics is the base of all engineering as well as technological branches. A sound knowledge of mathematical tools makes a technocrat to excel in his/her profession. In fact the “Industrial Mathematics”, a branch of Applied Mathematics, which is relevant for contemporary technological problems, is not only the queen of all sciences but is also the mother of all technologies.

The Department of Applied Mathematics offers courses to undergraduate and postgraduate students of various engineering disciplines. The syllabi have been designed in the areas of Applied Mathematics, Computational techniques, Statistics and operations research to impart sound knowledge of various mathematical tools and their applications in the engineering disciplines.

To keep pace with the growing technologies which are resulting in more and more complex phenomena requiring high precision result, the department of Applied Mathematics offered a 4 year B. Tech. course in Mathematics and Computing form the academic session 2011-2012. The aim of this program is to train the students in all the fundamentals of Mathematics & Computer Science with emphasis on computational techniques providing fusion of Mathematics with Computer Science. The scope of the course will cover the fields such as Computer Science, Engineering Computations, Financial Computations, Optimization Techniques and of course a profound knowledge of the Mathematics. The prospect of the course lies in the core engineering industries, software field and the financial sectors. The course will also make a sound foundation for the students willing to pursue Higher education in the discipline of engineering, Finance, Computational Mathematics, as well as Management. The students will be trained in such a way that graduate would be able to take up jobs in academia or industry or pursue higher studies. The response of the students is quite impressive.

The Department of Applied Mathematics is well equipped with computer lab and competent faculty with diversified specialization.

# BACHELOR OF TECHNOLOGY
# (MATHEMATICS & COMPUTING)

## I Year: First Semester

| Teaching Scheme | | | | | Contact Hours/ Week | | | Exam Duration (h) | | Relative Weights (%) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| S. No. | Subject Code | Course Title | Subject Area | Credit | L | T | P | Theory | Practical | CWS | PRS | MTE | ETE | PRE |
| **Group A** | | | | | | | | | | | | | | |
| 1 | MA101 | Mathematics - I | ASC | 4 | 3 | 1 | 0 | 3 | 0 | 25 | - | 25 | 50 | - |
| 2 | AP101 | Physics – I | ASC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 3 | AC101 | Chemistry | ASC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 4 | ME101 | Basic Mechanical Engineering | AEC | 4 | 4 | 0 | 0 | 3 | 0 | 25 | - | 25 | 50 | - |
| 5 | ME103 | Workshop Practice | AEC | 2 | 0 | 0 | 3 | 0 | 3 | - | 50 | - | - | 50 |
| 6 | HU101 | Communication Skills | HMC | 3 | 3 | 0 | 0 | 3 | 0 | 25 | - | 25 | 50 | - |
| | **Total** | | | **21** | 16 | 1 | 7 | | | | | | | |
| **Group B** | | | | | | | | | | | | | | |
| 1 | MA101 | Mathematics - I | ASC | 4 | 3 | 1 | 0 | 3 | 0 | 25 | - | 25 | 50 | - |
| 2 | AP101 | Physics – I | ASC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 3 | EE101 | Basic Electrical Engineering | AEC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 4 | CO101 | Programming Fundamentals | AEC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 5 | ME105 | Engineering Graphics | AEC | 2 | 0 | 0 | 3 | 0 | 3 | - | 50 | - | - | 50 |
| 6 | EN101 | Introduction to Environmental Science | AEC | 3 | 3 | 0 | 0 | 3 | 0 | 25 | - | 25 | 50 | - |
| | **Total** | | | **21** | 15 | 1 | 9 | | | | | | | |

## I Year: Second Semester

| Teaching Scheme | | | | | Contact Hours/Week | | | Exam Duration | | Relative Weights (%) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| S. No. | Subject Code | Course Title | Subject Area | Credit | L | T | P | Theory | Practical | CWS | PRS | MTE | ETE | PRE |
| **Group A** | | | | | | | | | | | | | | |
| 1 | MA102 | Mathematics- II | ASC | 4 | 3 | 1 | 0 | 3 | 0 | 25 | - | 25 | 50 | - |
| 2 | AP102 | Physics – II | ASC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 3 | EE102 | Basic Electrical Engineering | AEC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 4 | CO102 | Programming Fundamentals | AEC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 5 | ME102 | Engineering Graphics | AEC | 2 | 0 | 0 | 3 | 0 | 3 | - | 50 | - | - | 50 |
| 6 | EN102 | Introduction to Environmental Science | AEC | 3 | 3 | 0 | 0 | 3 | 0 | 25 | - | 25 | 50 | - |
| | **Total** | | | **21** | 15 | 1 | 9 | | | | | | | |
| **Group B** | | | | | | | | | | | | | | |
| 1 | MA102 | Mathematics- II | ASC | 4 | 3 | 1 | 0 | 3 | 0 | 25 | - | 25 | 50 | - |
| 2 | AP102 | Physics – II | ASC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 3 | AC102 | Chemistry | ASC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 4 | ME104 | Basic Mechanical Engineering | AEC | 4 | 4 | 0 | 0 | 3 | 0 | 25 | - | 25 | 50 | - |
| 5 | ME106 | Workshop Practice | AEC | 2 | 0 | 0 | 3 | 0 | 3 | - | 50 | - | - | 50 |
| 6 | HU102 | Communication Skills | HMC | 3 | 3 | 0 | 0 | 3 | 0 | 25 | - | 25 | 50 | - |
| | **Total** | | | **21** | 16 | 1 | 7 | | | | | | | |

## II Year: Third Semester

| S.No. | Code | Title | Area | Cr | L | T | P | TH | PH | CWS | PRS | MTE | ETE | PRE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. | CS251 | Data Structure | AEC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 2. | MC201 | Discrete Mathematics | DCC | 4 | 3 | 1 | 0 | 3 | 0 | 25 | - | 25 | 50 | - |
| 3. | MC203 | Mathematics-III | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 4. | MC205 | Probability & Statistics | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 5. | MC207 | Engineering Analysis and Design (Differential Equations and Applications) | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 6. | MG201 | Fundamentals of Management | HMC | 3 | 3 | 0 | 0 | 3 | 0 | 25 | - | 25 | 50 | - |
| | | **Total** | | **23** | | | | | | | | | | |

## II Year: Fourth Semester

| S.No. | Code | Title | Area | Cr | L | T | P | TH | PH | CWS | PRS | MTE | ETE | PRE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. | CS262 | Algorithm Design & Analysis | AEC | 4 | 3 | 1 | 0 | 3 | 0 | 25 | - | 25 | 50 | - |
| 2. | MC202 | Real Analysis | DCC | 4 | 3 | 1 | 0 | 3 | 0 | 25 | - | 25 | 50 | - |
| 3. | MC204 | Scientific Computing | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 4. | MC206 | Computer Organization & Architecture | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 5. | MC208 | Linear Algebra | DCC | 4 | 3 | 1 | 0 | 3 | 0 | 25 | - | 25 | 50 | - |
| 6. | HU202 | Engineering Economics | HMC | 3 | 3 | 0 | 0 | 3 | 0 | 25 | - | 25 | 50 | - |
| | | **Total** | | **23** | | | | | | | | | | |

## III Year: Fifth Semester

| S. No. | Code | Title | Area | Cr | L | T | P | TH | PH | CWS | PRS | MTE | ETE | PRE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. | MC301 | Operating System | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 2. | MC303 | Stochastic Processes | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 3. | MCxxx | Departmental Elective Course -1 | DEC/ GEC | 4 | 3 | 0/1 | 2/0 | 3 | 0 | 15/ 25 | 15/- | 30 /25 | 40/ 50 | - |
| 4. | MCxxx- | Departmental Elective Course- 2 | DEC/ GEC | 4 | 3 | 0/1 | 2/0 | 3 | 0 | 15/ 25 | 15/- | 30 /25 | 40/ 50 | - |
| 5. | UExxx | Open Elective Course | OEC | 3 | 3 | 0 | 0 | 3 | 0 | 25 | - | 25 | 50 | - |
| 6. | HU301 | Technical Communication | HMC | 2 | 2 | 0 | 0 | 2 | 0 | 25 | - | 25 | 50 | - |
| | | | **Total** | **21** | | | | | | | | | | |

## III Year: Sixth Semester

| S. No. | Code | Title | Area | Cr | L | T | P | TH | PH | CWS | PRS | MTE | ETE | PRE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. | MC302 | Data Base Management System | DCC | 4 | 3 | 1 | 0 | 3 | 0 | 25 | - | 25 | 50 | - |
| 2. | MC304 | Theory of Computation | DCC | 4 | 3 | 1 | 0 | 3 | 0 | 25 | - | 25 | 50 | - |
| 3. | MC306 | Financial Engineering | DCC | 4 | 3 | 1 | 0 | 3 | 0 | 25 | - | 25 | 50 | - |
| 4. | MCxxx | Departmental Elective Course -3 | DEC/ GEC | 4 | 3 | 0/1 | 2/0 | 3 | 0 | 15/ 25 | 15/- | 30 /25 | 40/ 50 | - |
| 5. | MCxxx | Departmental Elective Course -4 | DEC/ GEC | 4 | 3 | 0/1 | 2/0 | 3 | 0 | 15/ 25 | 15/- | 30 /25 | 40/ 50 | - |
| 6. | HU302 | Professional Ethics and Human Values | HMC | 2 | 2 | 0 | 0 | 2 | 0 | 25 | - | 25 | 50 | - |
| | | **Total** | | **22** | | | | | | | | | | |

## IV Year: Seventh Semester

| S. No. | Code | Title | Area | Cr | L | T | P | TH | PH | CWS | PRS | MTE | ETE | PRE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. | MC401 | B.Tech. Project-I | DCC | 4 | | | | | | | | | | |
| 2. | MC403 | Training Seminar | DCC | 2 | | | | | | | | | | |
| 3. | MC405 | Graph Theory | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 4. | MC407 | Cryptography & Network Security | DCC | 4 | 3 | 1 | 0 | 3 | 0 | 25 | - | 25 | 50 | - |
| 5. | MC409 | Mathematical Modeling & Simulation | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 6. | MCxxx | Departmental Elective Course -5 | DEC/ GEC | 4 | 3 | 0/1 | 2/0 | 3 | 0 | 15/ 25 | 15/- | 30 /25 | 40/ 50 | - |
| | | **Total** | **Total** | **22** | | | | | | | | | | |

## IV Year: Eighth Semester

| S. No. | Code | Title | Area | Cr | L | T | P | TH | PH | CWS | PRS | MTE | ETE | PRE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. | MC402 | B.Tech. Project-II | DCC | 8 | | | | | | | | | | |
| 2. | MC4xxx | Departmental Elective Course-6 | DEC/ GEC | 4 | 3 | 0/1 | 2/0 | 3 | 0 | 15/ 25 | 15/- | 30 /25 | 40/ 50 | - |
| 3. | MC4xxx | Departmental Elective Course-7 | DEC/ GEC | 4 | 3 | 0/1 | 2/0 | 3 | 0 | 15/ 25 | 15/- | 30 /25 | 40/ 50 | - |
| 4. | MC4xxx | Departmental Elective Course-8 | DEC/ GEC | 4 | 3 | 0/1 | 2/0 | 3 | 0 | 15/ 25 | 15/- | 30 /25 | 40/ 50 | - |
| | | **Total** | **Total** | **20** | | | | | | | | | | |

## List of Departmental Electives Courses

| S. No. | Subject Code | Subject | Elective No. |
|---|---|---|---|
| 1. | MC305 | Operations Research | DEC– 1 |
| 2. | MC307 | Object Oriented programming | |
| 3. | MC309 | Number Theory | |
| 4. | MC315 | Modern Algebra | DEC– 2 |
| 5. | MC317 | Numerical methods for ODE | |
| 6. | MC319 | Complex Analysis | |
| 7. | MC308 | Computer Networks | DEC – 3 |
| 8. | MC310 | Software Engineering | |
| 9. | MC312 | Artificial Intelligence. | |
| 10. | MC318 | Computer Graphics | DEC– 4 |
| 11. | MC320 | Web Technology | |
| 12. | MC322 | Cluster & Grid Computing | |
| 13. | MC324 | Big Data Analytis | |
| 14. | MC411 | Data Warehousing & Data Mining | DEC – 5 |
| 15. | MC413 | Compiler Design | |
| 16. | MC415 | Wireless & Mobile Computing | |
| 17. | MC417 | Multimedia System Design | |
| 18. | MC404 | Matrix Computation | DEC– 6 |
| 19. | MC406 | Partial Differential Equations | |
| 20. | MC408 | Quality Control & Decision Making | |
| 21. | MC410 | Topology | |
| 22. | MC412 | Functional Analysis | |
| 23. | MC418 | Optimization Techniques. | DEC– 7 |
| 24. | MC420 | Information Theory & Coding | |
| 25. | MC422 | Finite element methods | |
| 26. | MC424 | Game Theory | |
| 27. | MC426 | Differential Geometry | |
| 28. | MC432 | Fuzzy set & Fuzzy logic | DEC– 8 |
| 29. | MC434 | Numerical Methods for PDE | |
| 30. | MC436 | Petrinet Theory & Application | |
| 31. | MC438 | Tensor Calculus | |
| 32. | MC440 | Statistical Inference | |

# DEPARTMENT OF APPLIED PHYSICS

Applied Physics Department is providing cutting edge research, innovation and education in the emerging areas of sciences and technology. As a result, this department offers:

B. Tech. in Engineering Physics: This program covers the various interdisciplinary areas in physical sciences and emerging areas of engineering such as Nano Science and Technology, Plasma Physics, Microelectronics,Photonics, Quantum Information systems and Robotics etc. The program solving skills and understanding,which allows them to seek innovative careers in today's fast changing technological age.

Along with these academic programs, the department of Applied Physics is known for its academic excellence and enthusiastic R&D in thrust areas leading to large number of research publications in the leading nationaland international journals of high impact factors. Besides these, the Applied Physics Department is providing sound science base courses related to Applied Physics and Engineering Materials for all branches of B. Tech.students in their first and second semester.

The department has well equipped laboratories to support teaching programs for B. Tech. students, where experiments are designed to broaden the experimental skills of the students.

Department of Applied Physics has well equipped R&D Labs: Thin film & Material Science Lab with many equipments including Brucker Advanced X-ray diffractometer and Hitachi's Scanning Electron Microscope withEDS facility (central facility). Advanced Photonics Simulation Research Lab, Plasma Experimental Lab (under process), Plasma and Nano Simulation Lab (Theoretical), Terahertz Radiation and Atomic and Molecular Simulation Lab, Microelectronics Research Lab, Laser Spectroscopy Lab (Fluorescence Spectroscopy), Advanced Sensor Lab, Nuclear Engineering Lab, Luminescent Materials Research Lab (LMRL), Lithium Ion Battery Technology Lab, Nano Fabrication Lab.

**Major sponsored projects running in the Department at present:**

1. Role of plasma in the growth and field emission properties of graphene, DST-SERB, 18 Lakhs (2014-2017)
2. Study of Atomic Processes for multi-charged ions for plasma diagnostics, DST-SERB, Rs. 58 Lakhs (2017-2020)
3. Preparation and Characterization of Rare Earth ions doped Oxide, Fluoride and Oxy-Fluoride Glasses/Glassy Ceramics for Fiber Lasers and Optical Fiber Amplifiers, DST, Rs. 52 Lakhs 2016-2019

4. Photoinduced Charge Transfer Dynamics of Quantum Dots/Molecules under the Influence of External perturbation, DST-SERB, Rs. 62.5 Lakhs (2017-2020)
5. To support extensively to the Fluorescence spectroscopy, DST-FIST, >1.53 Crore (2012-2017)
6. Ion irradiation on filled-multiwalled carbon nanotubes to create N-V center, UGC-IUAC, Rs. 7.6 Lakhs 2017
7. Study of the chemical structure and bonding in CuO nanowire by using EXAFS Synchrotron radiation, UGC-DAE-IUAC-Indore 2017
8. Modelling and simulation of single mode CW high power fiber lasers, DRDO-CARS, 10 Lakhs (2014-2017)
9. All dielectric ,plasmonic and hybrid photonic nanostructures, DST-RMES, 30 Lakhs (2014-2017)
10. From plasmonic to dielectric and hybrid nanoantennas: Novel approaches to control electromagnetic waves and light, DST-RFBR, 30 Lakhs (2014-2017)
11. Development of Versatile Alkaline Earth Phosphate Micro and Nanophosphors for Energy Saving near UV-based White LEDs, GOI, Rs. 26 Lakhs (2015-2018)
12. Investigation of origin of Circular Rydberg States (CRS) in Beam Foil Excitation, DAE-BRNS, Rs. 25 Lakh (2014-17)
13. Photovoltaic and Multiferroic properties of multilayered BFO/BTO thin films using Swift Heavy Ion (SHI) irradiation, IUAC, Delhi Rs. 6.04 Lakhs, (2014-2017)
14. Elastic recoil detection analysis of Pt/Ti capped Na/Al and Li/Al thin films using 107Ag or 58Ni swift heavy ion beam, IUAC, Delhi, (2016-2019) Sanctioned
15. Electrical Energy Harvesting using Monolayer $MoS_2$ and $MoS_2$-Graphene Heterostructures for Self Powering Electronic and Bioelectronics Devices, DST-INSPIRE. Rs. 35 Lakhs (2017-2022)

Engineering Physics students at Delhi Technological University has founded Deltech Engineering PhysicsTechnological Hub (DEPTH), an undergraduate society where all sorts of events, including Technical Paper Presentations, guest lectures, holding seminars, debates etc are organized. The society has its very own e-newspaper“THE ENGINEERING PHYSICS TIMES” which is edited and maintained by its council members.

Department of Applied Physics has the students chapters of (i) International Society for Optical Engineering(SPIE)-USA and (ii) Optical Society of America (OSA-USA). Photonic Design Centre is established in theApplied Physics Department as a part of National Program on Micro and Smart Systems (NPMASS) which isbeing coordinated by Indian Institute of Science, Bangalore.

# BACHELOR OF TECHNOLOGY (ENGINEERING PHYSICS)

## I Year: First Semester

| Teaching Scheme | | | | | Contact Hours/ Week | | | Exam Duration (h) | | Relative Weights (%) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| S. No. | Subject Code | Course Title | Subject Area | Credit | L | T | P | Theory | Practical | CWS | PRS | MTE | ETE | PRE |
| **Group A** | | | | | | | | | | | | | | |
| 1 | MA101 | Mathematics - I | ASC | 4 | 3 | 1 | 0 | 3 | 0 | 25 | - | 25 | 50 | - |
| 2 | AP101 | Physics – I | ASC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 3 | AC101 | Chemistry | ASC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 4 | ME101 | Basic Mechanical Engineering | AEC | 4 | 4 | 0 | 0 | 3 | 0 | 25 | - | 25 | 50 | - |
| 5 | ME103 | Workshop Practice | AEC | 2 | 0 | 0 | 3 | 0 | 3 | - | 50 | - | - | 50 |
| 6 | HU101 | Communication Skills | HMC | 3 | 3 | 0 | 0 | 3 | 0 | 25 | - | 25 | 50 | - |
| | **Total** | | | **21** | 16 | 1 | 7 | | | | | | | |
| **Group B** | | | | | | | | | | | | | | |
| 1 | MA101 | Mathematics - I | ASC | 4 | 3 | 1 | 0 | 3 | 0 | 25 | - | 25 | 50 | - |
| 2 | AP101 | Physics – I | ASC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 3 | EE101 | Basic Electrical Engineering | AEC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 4 | CO101 | Programming Fundamentals | AEC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 5 | ME105 | Engineering Graphics | AEC | 2 | 0 | 0 | 3 | 0 | 3 | - | 50 | - | - | 50 |
| 6 | EN101 | Introduction to Environmental Science | AEC | 3 | 3 | 0 | 0 | 3 | 0 | 25 | - | 25 | 50 | - |
| | **Total** | | | **21** | 15 | 1 | 9 | | | | | | | |

## I Year: Second Semester

| Teaching Scheme | | | | | Contact Hours/Week | | | Exam Duration | | Relative Weights (%) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| S. No. | Subject Code | Course Title | Subject Area | Credit | L | T | P | Theory | Practical | CWS | PRS | MTE | ETE | PRE |
| **Group A** | | | | | | | | | | | | | | |
| 1 | MA102 | Mathematics- II | ASC | 4 | 3 | 1 | 0 | 3 | 0 | 25 | - | 25 | 50 | - |
| 2 | AP102 | Physics – II | ASC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 3 | EE102 | Basic Electrical Engineering | AEC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 4 | CO102 | Programming Fundamentals | AEC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 5 | ME102 | Engineering Graphics | AEC | 2 | 0 | 0 | 3 | 0 | 3 | - | 50 | - | - | 50 |
| 6 | EN102 | Introduction to Environmental Science | AEC | 3 | 3 | 0 | 0 | 3 | 0 | 25 | - | 25 | 50 | - |
| | **Total** | | | **21** | 15 | 1 | 9 | | | | | | | |
| **Group B** | | | | | | | | | | | | | | |
| 1 | MA102 | Mathematics – II | ASC | 4 | 3 | 1 | 0 | 3 | 0 | 25 | - | 25 | 50 | - |
| 2 | AP102 | Physics – II | ASC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 3 | AC102 | Chemistry | ASC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 4 | ME104 | Basic Mechanical Engineering | AEC | 4 | 4 | 0 | 0 | 3 | 0 | 25 | - | 25 | 50 | - |
| 5 | ME106 | Workshop Practice | AEC | 2 | 0 | 0 | 3 | 0 | 3 | - | 50 | - | - | 50 |
| 6 | HU102 | Communication Skills | HMC | 3 | 3 | 0 | 0 | 3 | 0 | 25 | - | 25 | 50 | - |
| | **Total** | | | **21** | 16 | 1 | 7 | | | | | | | |

## II Year: Third Semester

| S. No. | Code | Title | Area | Cr | L | T | P | TH | PH | CWS | PRS | MTE | ETE | PRE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. | ME251 | Engineering Mechanics | AEC | 4 | 3 | 1 | 0 | 3 | 0 | 25 | 0 | 25 | 50 | - |
| 2. | EP201 | Introduction to Computing | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 3. | EP203 | Mathematical Physics | DCC | 4 | 3 | 1 | 0 | 3 | 0 | 25 | 0 | 25 | 50 | - |
| 4. | EP205 | Classical and Quantum Mechanics | DCC | 4 | 3 | 1 | 0 | 3 | 0 | 25 | 0 | 25 | 50 | - |
| 5. | EP207 | Digital Electronics (Engineering Analysis and Design) | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 6. | MG201 | Fundamentals of Management | HMC | 3 | 3 | 0 | 0 | 3 | 0 | 25 | 0 | 25 | 50 | - |
| | | **Total** | | | | | | | | | | | | |

## II Year: Fourth Semester

| S. No. | Code | Title | Area | Cr | L | T | P | TH | PH | CWS | PRS | MTE | ETE | PRE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. | EC272 | Communication System | AEC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 2. | EP202 | Condensed Matter Physics | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 3. | EP204 | Optics | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 4. | EP206 | Microprocessor and Interfacing | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 5. | EP208 | Computational Methods | DCC | 4 | 3 | 1 | 0 | 3 | 0 | 25 | 0 | 25 | 50 | - |
| 6. | HU202 | Engineering Economics | HMC | 3 | 3 | 0 | 0 | | | 25 | 0 | 25 | 50 | - |
| | | **Total** | | | | | | | | | | | | |

## III Year: Fifth Semester

| S. No. | Code | Title | Area | Cr | L | T | P | TH | PH | CWS | PRS | MTE | ETE | PRE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. | EP301 | Semiconductor Devices | DCC | 4 | 3 | 1 | - | 3 | 0 | 25 | 0 | 25 | 50 | - |
| 2. | EP303 | Electromagnetic Theory, antennas and Propagation | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 3. | EP3xx | Departmental Elective Course- 1 | DEC/ GEC | 4 | 3 | 0/1 | 2/0 | 3 | 0 | 15/ 25 | 15/- | 30 /25 | 40/ 50 | |
| 4. | EP3xx | Departmental Elective Course- 2 | DEC/ GEC | 4 | 3 | 0/1 | 2/0 | 3 | 0 | 15/ 25 | 15/- | 30 /25 | 40/ 50 | |
| 5. | UExxx | Open Elective Course | OEC | 3 | 3 | 01 | - | 3 | 0 | 25 | - | 25 | 50 | - |
| 6. | HU301 | Technical Communication | HMC | 2 | 0 | 0 | - | 3 | 0 | 25 | - | 25 | 50 | |
| | | **Total** | | **21** | | | | | | | | | | |

## III Year: Sixth Semester

| S. No. | Code | Title | Area | Cr | L | T | P | TH | PH | CWS | PRS | MTE | ETE | PRE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. | EP302 | Fiber Optics and Optical Communication | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 2. | EP304 | Fabrication and Characterization of Nanostructures | DCC | 4 | 3 | 1 | 0 | 3 | 0 | 25 | 0 | 25 | 50 | - |
| 3. | EP306 | Microwave Engineering | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 4. | EP3xx | Departmental Elective Course- 3 | DEC/ GEC | 4 | 3 | 0/1 | 2/0 | 3 | 0 | 15/ 25 | 15/- | 30 /25 | 40/ 50 | |
| 5. | EP3xx | Departmental Elective Course- 4 | DEC/ GEC | 4 | 3 | 0/1 | 2/0 | 3 | 0 | 15/ 25 | 15/- | 30 /25 | 40/ 50 | |
| 6. | HU304 | Profession Ethics & Human Values | HMC | 2 | 2 | 0 | - | 3 | 0 | 25 | - | 25 | 50 | |
| | | **Total** | | **22** | | | | | | | | | | |

## IV Year: Seventh Semester

| S. No. | Code | Title | Area | Cr | L | T | P | TH | PH | CWS | PRS | MTE | ETE | PRE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. | EP401 | B.Tech. Project-I | DCC | 4 | | | | | | | | | | |
| 2. | EP403 | Training Seminar | DCC | 2 | | | | | | | | | | |
| 3. | EP405 | VLSI and FPGA design | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 4. | EP407 | Mobile and Satellite communication | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 5. | EP4xx | Departmental Elective Course -5 | DEC/ GEC | 4 | 3 | 0/1 | 2/0 | 3 | 0 | 15/ 25 | 15/- | 30 /25 | 40/ 50 | |
| 6. | EP4xx | Departmental Elective Course-6 (Minor) | DEC/ GEC | 4 | 3 | 0/1 | 2/0 | 3 | 0 | 15/ 25 | 15/- | 30 /25 | 40/ 50 | - |
| | | **Total** | | **22** | | | | | | | | | | |

## IV Year: Eighth Semester

| S. No. | Code | Title | Area | Cr | L | T | P | TH | PH | CWS | PRS | MTE | ETE | PRE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. | EP402 | B.Tech. Project-II | DCC | 8 | | | | | | | | | | |
| 2. | EP404 | Alternate Energy Storage and Conversion Devices | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 3. | EP4xx | Departmental Elective Course-7 (Minor) | DEC/ GEC | 4 | 3 | 1 | 0 | 3 | 0 | 25 | 0 | 25 | 50 | - |
| 4. | EP4xx | Departmental Elective Course -8 | DEC/ GEC | 4 | 3 | 1 | 0 | 3 | 0 | 25 | 0 | 25 | 50 | - |
| 5. | EP4xx | Departmental Elective Course -5 | DEC/ GEC | 4 | 3 | 0/1 | 2/0 | 3 | 0 | 15/ 25 | 15/- | 30 /25 | 40/ 50 | |
| 6. | EP4xx | Departmental Elective Course-6 (Minor) | DEC/ GEC | 4 | 3 | 0/1 | 2/0 | 3 | 0 | 15/ 25 | 15/- | 30 /25 | 40/ 50 | - |
| | | **Total** | | **20** | | | | | | | | | | |

## List of Departmental Electives

| S.No. | Elective Code | Title of Elective | Elective no. |
|---|---|---|---|
| 1. | EP-305 | Atomic and Molecular Physics | DEC-1,2 |
| 2. | EP-307 | Biophysics | |
| 3. | EP-309 | Quantum Information and Computing | |
| 4. | EP-311 | Computer Networking | |
| 5. | EP-308 | Laser and Instrumentation | DEC-3,4 |
| 6. | EP-310 | Medical Physics and Physiological measurements | |
| 7. | EP-312 | Fourier optics and holography | |
| 8. | EP-314 | Instrumentation and Control | |
| 9. | EP-316 | Cosmology and Astrophysics | |
| 10. | EP-409 | Information theory and coding | DEC-5,6 |
| 11. | EP-411 | Advanced Simulation Techniques in Physics | |
| 12. | EP-413 | Continuum Mechanics | |
| 13. | EP-415 | Nano Science and Technology | |
| 14. | EP- 417 | Photonics | |
| 15. | EP-419 | Introduction to Automation and Motion Control | |
| 16. | EP-421 | Principles of Nuclear Engineering | |
| 17. | EP-423 | Space and Atmospheric Science-I | |
| 18. | EP-425 | Plasma Science and Technology-I | |
| 19. | EP-406 | Introduction to Spintronics | DEC-7,8 |
| 20. | EP-408 | Integrated Optics | |
| 21. | EP-410 | Robotic Engineering | |
| 22. | EP-412 | Nuclear Materials for Engineering Applications | |
| 23. | EP-414 | Space and Atmospheric Science-II | |
| 24. | EP-416 | Plasma Science and Technology-II | |
| 25. | EP-418 | Digital Signal Processing | |
| 26. | EP-420 | Fuzzy Logic and Neural Networks | |
| 27. | EP-422 | Embedded Systems Design | |

# DEPARTMENT OF BIO-TECHNOLOGY

The Department of Biotechnology was established in the year 2004 with a mission to create fusion of engineering and life sciences that promotes scientific discovery and development of new technologies through research and education. The focus of the department is on basic research in modern biotechnology, molecular basis of life processes and bioinformatics. The department admits students for Bachelor of Technology (B. Tech.) in Biotechnology and Master of Technology (M. Tech.) in Bioinformatics. Besides basic and engineering sciences, the curriculum covers various subjects of Biotechnology.

Currently, the department has 10 faculty members. The department has an intake of 60 undergraduate students. The B.Tech. (Biotechnology) programme has recently been accredited by NBA for 3 years. Research interest of the department are Biomaterials, Immunology, Bioprocess technology, Enzyme technology, Plant Biotechnology, Bioinformatics, Genome Infomatics, Biomechanics, Stem Cell Biology, Geonomics and Proteomics, Tissue culture and Drug Design. The department has sponsored projects amounting to nearly 3 crores from various agencies including ICMR, SERB, DBT and CSIR, and has developed modern research facility and infrastructure to support the teaching and research activities.

The department organized a corporate meet on Knowledge Park and a national seminar on Biotechnology & Bioengineering (2007) and national symposium on Biotechnology (NaSBi-2010) in which distinguished speakers from CSIR, DST, ICGEB, IIT, AIIMS, IGIB, JNU and renowned companies like Monsanto and Biocon delivered plenary lectures.

The department has started annual departmental magazine, ALLELE, and invites recent achievements and articles for the same.

The students of the department organize a technical festival KARYON every year. They organize several technical, biotechnology and management related events on national level. KARYON -13 witnessed the presence of several eminent speakers AshwaniPareek (JNU),Dr Vinod Scaria (IGIB-CSIR) and DrAnshu Bhardwaj (CSIR-OSDD).

The department has recently launched the International Journal of Biotechnology and Bioinformatics (IJABB) edited by Prof Samir K. Brahmachari (Director General, CSIR) (Editor-in-chief) and DrYashaHasija (Assistant Professor, Department of Biotechnology, DTU) (Executive Editor).

**Objectives of the Department are:**

(i) To provide state of art expertise in various aspects of biotechnology, ii. Develop expertise in Bioinformatics, iii. Research for the benefit of human kind to develop effective interactions with industries involved in biotechnology and bioinformatics, iv. Knowledge dissemination through seminars, symposia and short term refresher courses at national level, and v. Industrial consultancy and Industry-University partnership in Biotechnology.

**Facilities at Department**

(i) A Bioreactor (10 litre capacity) fully equipped with Automatic Control along with Computer data Acquisition of Analysis Software, ii. Gas liquid chromatography, Ultrafiltration Systems, UV-Vis Spectrophotometers, Atomic Absorption Spectrophotometer, Ultracentrifuge, Refrigerated Centrifuges (low and high speed). Viscometer with PIV computer, Vertical autoclave, iii. Incubator hybridizer.

# BACHELOR OF TECHNOLOGY (BIOTECHNOLOGY)

## I Year: First Semester

| Teaching Scheme | | | | | Contact Hours/ Week | | | Exam Duration (h) | | Relative Weights (%) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| S. No. | Subject Code | Course Title | Subject Area | Credit | L | T | P | Theory | Practical | CWS | PRS | MTE | ETE | PRE |
| **Group A** | | | | | | | | | | | | | | |
| 1 | MA101 | Mathematics - I | ASC | 4 | 3 | 1 | 0 | 3 | 0 | 25 | - | 25 | 50 | - |
| 2 | AP101 | Physics – I | ASC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 3 | AC101 | Chemistry | ASC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 4 | ME101 | Basic Mechanical Engineering | AEC | 4 | 4 | 0 | 0 | 3 | 0 | 25 | - | 25 | 50 | - |
| 5 | ME103 | Workshop Practice | AEC | 2 | 0 | 0 | 3 | 0 | 3 | - | 50 | - | - | 50 |
| 6 | HU101 | Communication Skills | HMC | 3 | 3 | 0 | 0 | 3 | 0 | 25 | - | 25 | 50 | - |
| | **Total** | | | **21** | 16 | 1 | 7 | | | | | | | |
| **Group B** | | | | | | | | | | | | | | |
| 1 | MA101 | Mathematics - I | ASC | 4 | 3 | 1 | 0 | 3 | 0 | 25 | - | 25 | 50 | - |
| 2 | AP101 | Physics – I | ASC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 3 | EE101 | Basic Electrical Engineering | AEC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 4 | CO101 | Programming Fundamentals | AEC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 5 | ME105 | Engineering Graphics | AEC | 2 | 0 | 0 | 3 | 0 | 3 | - | 50 | - | - | 50 |
| 6 | EN101 | Introduction to Environmental Science | AEC | 3 | 3 | 0 | 0 | 3 | 0 | 25 | - | 25 | 50 | - |
| | **Total** | | | **21** | 15 | 1 | 9 | | | | | | | |

## I Year: Second Semester

| Teaching Scheme | | | | | Contact Hours/ Week | | | Exam Duration (h) | | Relative Weights (%) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| S. No. | Subject Code | Course Title | Subject Area | Credit | L | T | P | Theory | Practical | CWS | PRS | MTE | ETE | PRE |
| **Group A** | | | | | | | | | | | | | | |
| 1 | MA102 | Mathematics -II | ASC | 4 | 3 | 1 | 0 | 3 | 0 | 25 | - | 25 | 50 | - |
| 2 | AP102 | Physics – II | ASC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 3 | EE102 | Basic Electrical Engineering | AEC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 4 | CO102 | Programming Fundamentals | AEC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 5 | ME102 | Engineering Graphics | AEC | 2 | 0 | 0 | 3 | 0 | 3 | - | 50 | - | - | 50 |
| 6 | EN102 | Introduction to Environmental Science | AEC | 3 | 3 | 0 | 0 | 3 | 0 | 25 | - | 25 | 50 | - |
| | **Total** | | | **21** | 15 | 1 | 9 | | | | | | | |
| **Group B** | | | | | | | | | | | | | | |
| 1 | MA102 | Mathematics- II | ASC | 4 | 3 | 1 | 0 | 3 | 0 | 25 | - | 25 | 50 | - |
| 2 | AP102 | Physics – II | ASC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 3 | AC102 | Chemistry | ASC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 4 | ME104 | Basic Mechanical Engineering | AEC | 4 | 4 | 0 | 0 | 3 | 0 | 25 | - | 25 | 50 | - |
| 5 | ME106 | Workshop Practice | AEC | 2 | 0 | 0 | 3 | 0 | 3 | - | 50 | - | - | 50 |
| 6 | HU102 | Communication Skills | HMC | 3 | 3 | 0 | 0 | 3 | 0 | 25 | - | 25 | 50 | - |
| | **Total** | | | **21** | 16 | 1 | 7 | | | | | | | |

## II Year: Third Semester

| S. No. | Code | Title | Area | Cr | L | T | P | TH | PH | CWS | PRS | MTE | ETE | PRE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. | MC251 | Applied Mathematics | AEC | 4 | 3 | 1 | 0 | 3 | 0 | 25 | - | 25 | 50 | - |
| 2. | BT201 | Introduction to Biotechnology | DCC | 4 | 3 | 1 | 0 | 3 | 0 | 25 | - | 25 | 50 | - |
| 3. | BT203 | Biochemistry | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 25 | 20 | 40 | - |
| 4. | BT205 | Biochemical Engineering Principles | DCC | 4 | 3 | 0 | 2 | 0 | 3 | 15 | 25 | 20 | 40 | - |
| 5. | BT207 | Engineering Analysis and Design | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 25 | 20 | 40 | - |
| 6. | HU201 | Engineering Economics | HMC | 3 | 3 | 0 | 0 | 3 | 0 | 25 | - | 25 | 50 | - |
| | | **Total** | | **23** | | | | | | | | | | |

## II Year: Fourth Semester

| S. No. | Code | Title | Area | Cr | L | T | P | TH | PH | CWS | PRS | MTE | ETE | PRE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. | CO252 | Data Structure and Algorithm | AEC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 25 | 20 | 40 | |
| 2. | BT202 | Molecular Biology | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 25 | 20 | 40 | - |
| 3. | BT204 | Genetics | DCC | 4 | 3 | 1 | 0 | 3 | 0 | 25 | - | 25 | 50 | - |
| 4. | BT206 | Microbiology | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 25 | 20 | 40 | - |
| 5. | BT208 | Structural Biology | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 25 | 20 | 40 | - |
| 6. | MG202 | Fundamentals of Management | HMC | 3 | 3 | 0 | 0 | 3 | 0 | 25 | - | 25 | 50 | - |
| | | **Total** | | **23** | | | | | | | | | | |

## III Year: Fifth Semester

| S. No. | Code | Title | Area | Cr | L | T | P | TH | PH | CWS | PRS | MTE | ETE | PRE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. | BT 301 | Immunology and Immuno-Technology | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 25 | 20 | 40 | - |
| 2. | BT 303 | Genetic Engineering | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 25 | 20 | 40 | - |
| 3. | BT 3xx | Departmental Elective Course- 1 | DEC/ GEC | 4 | 3 | 0/1 | 2/0 | 3 | 0 | 15/ 25 | 25/- | 20 /25 | 40/ 50 | - |
| 4. | BT3xx | Departmental Elective Course- 2 | DEC/ GEC | 4 | 3 | 0/1 | 2/0 | 3 | 0 | 15/ 25 | 25/- | 20 /25 | 40/ 50 | - |
| 5. | UExxx | Open Elective Course | OEC | 3 | 3 | 0 | 0 | 3 | 0 | 25 | - | 25 | 50 | - |
| 6. | HU301 | Professional Ethics and Human Values | HMC | 2 | 2 | 0 | 0 | 3 | 0 | 25 | - | 25 | 50 | - |
| | | **Total** | | **21** | | | | | | | | | | |

## III Year: Sixth Semester

| S. No. | Code | Title | Area | Cr | L | T | P | TH | PH | CWS | PRS | MTE | ETE | PRE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. | BT302 | Plant Biotechnology | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 25 | 20 | 40 | - |
| 2. | BT304 | Animal Biotechnology | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 25 | 20 | 40 | - |
| 3. | BT306 | Genomics and Proteomics | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 25 | 20 | 40 | - |
| 4. | BT3xx | Departmental Elective Course- 3 | DEC/ GEC | 4 | 3 | 0/1 | 2/0 | 3 | 0 | 15/ 25 | 25/- | 20 /25 | 40/ 50 | - |
| 5. | BT3xx | Departmental Elective Course- 4 | DEC/ GEC | 4 | 3 | 0/1 | 2/0 | 3 | 0 | 15/ 25 | 25/- | 20 /25 | 40/ 50 | - |
| 6. | HU302 | Technical Communication | HMC | 2 | 2 | 0 | 0 | 3 | 0 | 25 | | 25 | 50 | - |
| | | **Total** | | **22** | | | | | | | | | | |

## IV Year: Seventh Semester

| S. No. | Code | Title | Area | Cr | L | T | P | TH | PH | CWS | PRS | MTE | ETE | PRE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. | BT 401 | B.Tech Project-I | DCC | 4 | | | | | | | | | | |
| 2. | BT 403 | Training Seminar | DCC | 2 | | | | | | | | | | |
| 3. | BT 405 | Fundamental of Computational Biology | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 25 | 20 | 40 | - |
| 4. | BT 407 | Bioprocess Tech & Downstream Process | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 25 | 20 | 40 | - |
| 5. | BT4xx | Departmental Elective Course- 5 | DEC/ GEC | 4 | 3 | 0/1 | 2/0 | 3 | 0 | 15/ 25 | 25/- | 20/ 25 | 40/ 50 | - |
| 6. | BT4xx | Departmental Elective Course- 6 | DEC/ GEC | 4 | 3 | 0/1 | 2/0 | 3 | 0 | 15/ 25 | 25/- | 20 /25 | 40/ 50 | - |
| | | **Total** | | **22** | | | | | | | | | | |

## IV Year: Eighth Semester

| S. No. | Code | Title | Area | Cr | L | T | P | TH | PH | CWS | PRS | MTE | ETE | PRE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. | BT402 | B.Tech Project-II | DCC | 8 | | | | | | | | | | |
| 2. | BT404 | Advances in Computational Biology | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 25 | 20 | 40 | - |
| 3. | BT4xx | Departmental Elective Course- 7 | DEC/ GEC | 4 | 3 | 0/1 | 2/0 | 3 | 0 | 15/ 25 | 25/- | 20 /25 | 40/ 50 | - |
| 4. | BT4xx | Departmental Elective Course- 8 | DEC/ GEC | 4 | 3 | 0/1 | 2/0 | 3 | 0 | 15/ 25 | 25/- | 20/ 25 | 40/ 50 | - |
| | | **Total** | | **20** | | | | | | | | | | |

## List of Departmental Elective Courses

| S. No. | Elective Code | Title of Elective | Elective no. |
|---|---|---|---|
| 1. | BT-305 | Instrumentation in Biotechnology | DEC 1 & 2 |
| 2. | BT-307 | Food Biotechnology | |
| 3. | BT-309 | Object oriented Programing | |
| 4. | BT-311 | Introduction to Biomedical Engineering | |
| 5. | BT-313 | Thermodynamics of Biological System | |
| 6. | BT-315 | Current topics in Biotechnology | |
| 7. | BT-317 | Enzymology and Enzyme Technology | |
| 8. | BT-319 | Drug Design and Delivery | |
| 9. | BT-321 | Bioprocess Plant Design | |
| 10. | BT-323 | Population Genetics | |
| 11. | BT-325 | Cell Biology | |
| 12. | BT-308 | Stem Cells and Regenerative Medicine | DEC 3 & 4 |
| 13. | BT-310 | Biopolymers | |
| 14. | BT-312 | Metabolic Engineering | |
| 15. | BT-314 | Ecology and Evolution | |
| 16. | BT-316 | Transgenic Technology | |
| 17. | BT-318 | Bioenergy and Biofuels | |
| 18. | BT-320 | Genomics in Medicine | |
| 19. | BT-322 | Protein Engineering | |
| 20. | BT-324 | Biodiversity and Bioresource Planning | |
| 21. | BT-326 | Medical Microbiology | |
| 22. | BT-328 | Bioinformatics approaches in Complex disorders | |

| S. No. | Elective Code | Title of Elective | Elective no. |
|---|---|---|---|
| 23. | BT-409 | Concepts in Neurobiology | DEC 5 & 6 |
| 24. | BT-411 | Industrial Biotechnology | |
| 25. | BT-413 | Nanobiotechnology | |
| 26. | BT-415 | Medical Physics | |
| 27. | BT-417 | Plant Bioinformatics | |
| 28. | BT-419 | Cancer Biology | |
| 29. | BT-421 | Pharmacogenomics and Personalized Medicine | |
| 30. | BT-423 | Technological Application in Food Technology | |
| 31. | BT-425 | Biomaterials | |
| 32. | BT-427 | Pharmaceutical Sciences | |
| 33. | BT-406 | Agriculture Microbiology | DEC 7 & 8 |
| 34. | BT-408 | Bioethics and Intellectual Property Rights | |
| 35. | BT-410 | System Biology | |
| 36. | BT-412 | Advanced Bioanalytical Techniques | |
| 37. | BT-414 | Clinical Biotechnology | |
| 38. | BT-416 | Plant Metabolic Engineering | |
| 39. | BT-418 | Crop protection and Pest management | |
| 40. | BT-420 | Biosensor | |
| 41. | BT-422 | Green Energy Technology | |
| 42. | BT-424 | Neutraceuticals | |

# DEPARTMENT OF CIVIL ENGINEERING

Traditionally Civil Engineering has played an important role in improving the civic life of society by harmonizing the natural resources available on the earth. The major areas in the field of Civil Engineering are design and construction of various structures like bridges, buildings, roads, tunnels & dams, developing new construction technologies, design & development of foundation systems, geotechnical engineering, transportation & traffic engineering, municipal & sanitary services, surveying, GIS & remote sensing, and hydraulics & water resources engineering. Civil Engineers have also found an important role in some newer areas like design and construction of waste containment systems, disposal of nuclear wastes, and protection of groundwater resources. In recent years Civil Infrastructure development is resulting into development of new appropriate materials. The role of specialized geotechnical engineers is vital and relevant for any structure to stand and stable on a suitably designed foundation system. Transportation engineering deals with the planning, design & construction of roads, railways, metro and mono rails, airport, dock & harbours, as well as controlling & regulating the traffic flow. Broadly a Civil Engineer is expected to do planning, research, design and construction of buildings and roads; traffic and transportation systems; irrigation and power related infrastructure, water supply and sewage disposal systems, dam and reservoirs; ports and harbors; airways and navigation; treatment of industrial & urban wastes and disaster mitigation; river linking etc.

Besides the basic and engineering sciences, the curriculum in civil engineering covers various professional subjects on structures, foundations, construction, works management and cost, transportation engineering, irrigation engineering hydraulics and earthquake technology etc.

Apart from the B.Tech. Civil Engineering program the department also offers regular M.Tech. Programs in Structural Engineering, Geotechnical Engineering and Hydraulics and Water resources Engineering . The annual Intake at UG level is 120 whereas at PG level it is 59.

The B.Tech. Civil engineering program has recently been accredited by NBA for three years.

The PG programs of the department for the last 30 years, have contributed significantly to the manpower development in highly relevant areas of national importance.

The department also provides opportunity to working engineers for upgrading their qualification under Continuing Education Program on part time basis. These programs are M. Tech. in day time and B. Tech. in evening time.

The UG curriculum is broad-based and designed to introduce the students with a wide range of problems encountered by Civil Engineers. Electives, self-study courses, and independently conducted projects are offered in the pre-final year and final year to enable the students to develop additional depth in the areas of special interest to them. Survey camp and practical training, which are part of the curriculum, aim to expose the students to actual field problems. Laboratory experiments, computer aided analysis, design & drawing and the tutorial classes are held to build confidence in the students.

The department is well equipped with laboratory related to Structures, Concrete Technology Soil Mechanics, Rock Mechanics, Highway Engineering, Experimental Stress Analysis, Computational Mechanics, Computer Aided Design, photogrammetry & GIS facilities and Fluid Mechanics & Hydraulics. The department undertakes to organize special lectures and discussion by eminent persons from the field and industry. The department has established a student chapter namely “SEM DCE Student Chapter” with the society for Experimental Mechanics, USA. The interested students are encouraged to become member of SEM DCE Students Chapter. Keeping in view the requirements of personality development of the students, the department has stated in 2009, the Society of Civil & Environmental Engineers (SCEE).

The department lays greater emphasis on the quality research and development. Excellent facilities are available to conduct research for the award of Ph.D. degree in the discipline of Civil Engineering: Structural Engineering, Structural Dynamics, Earthquake Engineering, Water Resources Engineering, Experimental Mechanics, Geotechnical Engineering and other interdisciplinary areas.

# BACHELOR OF TECHNOLOGY (CIVIL ENGINEERING)

## I Year: First Semester

| Teaching Scheme | | | | | Contact Hours/ Week | | | Exam Duration (h) | | Relative Weights (%) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| S. No. | Subject Code | Course Title | Subject Area | Credit | L | T | P | Theory | Practical | CWS | PRS | MTE | ETE | PRE |
| **Group A** | | | | | | | | | | | | | | |
| 1 | MA101 | Mathematics - I | ASC | 4 | 3 | 1 | 0 | 3 | 0 | 25 | - | 25 | 50 | - |
| 2 | AP101 | Physics – I | ASC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 3 | AC101 | Chemistry | ASC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 4 | ME101 | Basic Mechanical Engineering | AEC | 4 | 4 | 0 | 0 | 3 | 0 | 25 | - | 25 | 50 | - |
| 5 | ME103 | Workshop Practice | AEC | 2 | 0 | 0 | 3 | 0 | 3 | - | 50 | - | - | 50 |
| 6 | HU101 | Communication Skills | HMC | 3 | 3 | 0 | 0 | 3 | 0 | 25 | - | 25 | 50 | - |
| | **Total** | | | **21** | 16 | 1 | 7 | | | | | | | |
| **Group B** | | | | | | | | | | | | | | |
| 1 | MA101 | Mathematics - I | ASC | 4 | 3 | 1 | 0 | 3 | 0 | 25 | - | 25 | 50 | - |
| 2 | AP101 | Physics – I | ASC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 3 | EE101 | Basic Electrical Engineering | AEC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 4 | CO101 | Programming Fundamentals | AEC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 5 | ME105 | Engineering Graphics | AEC | 2 | 0 | 0 | 3 | 0 | 3 | - | 50 | - | - | 50 |
| 6 | EN101 | Introduction to Environmental Science | AEC | 3 | 3 | 0 | 0 | 3 | 0 | 25 | - | 25 | 50 | - |
| | **Total** | | | **21** | 15 | 1 | 9 | | | | | | | |

## I Year: Second Semester

| Teaching Scheme | | | | | Contact Hours/ Week | | | Exam Duration (h) | | Relative Weights (%) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| S. No. | Subject Code | Course Title | Subject Area | Credit | L | T | P | Theory | Practical | CWS | PRS | MTE | ETE | PRE |
| **Group A** | | | | | | | | | | | | | | |
| 1 | MA102 | Mathematics - II | ASC | 4 | 3 | 1 | 0 | 3 | 0 | 25 | - | 25 | 50 | - |
| 2 | AP102 | Physics – II | ASC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 3 | EE102 | Basic Electrical Engineering | AEC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 4 | CO102 | Programming Fundamentals | AEC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 5 | ME102 | Engineering Graphics | AEC | 2 | 0 | 0 | 3 | 0 | 3 | - | 50 | - | - | 50 |
| 6 | EN102 | Introduction to Environmental Science | AEC | 3 | 3 | 0 | 0 | 3 | 0 | 25 | - | 25 | 50 | - |
| | **Total** | | | **21** | 15 | 1 | 9 | | | | | | | |
| **Group B** | | | | | | | | | | | | | | |
| 1 | MA102 | Mathematics- II | ASC | 4 | 3 | 1 | 0 | 3 | 0 | 25 | - | 25 | 50 | - |
| 2 | AP102 | Physics – II | ASC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 3 | AC102 | Chemistry | ASC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 4 | ME104 | Basic Mechanical Engineering | AEC | 4 | 4 | 0 | 0 | 3 | 0 | 25 | - | 25 | 50 | - |
| 5 | ME106 | Workshop Practice | AEC | 2 | 0 | 0 | 3 | 0 | 3 | - | 50 | - | - | 50 |
| 6 | HU102 | Communication Skills | HMC | 3 | 3 | 0 | 0 | 3 | 0 | 25 | - | 25 | 50 | - |
| | **Total** | | | **21** | 16 | 1 | 7 | | | | | | | |

## II Year: Third Semester

| S. No. | Code | Title | Area | Cr | L | T | P | TH | PH | CWS | PRS | MTE | ETE | PRE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. | EC251 | Basic Electronics & Instrumentation | AEC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 2. | CE201 | Civil Engineering Basics and Applications | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 3. | CE203 | Engineering Mechanics | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 4. | CE205 | Fluid Mechanics | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 5. | CE207 | Engineering Analysis and Design | DCC | 4 | 3 | 1 | 0 | 3 | 0 | 25 | - | 25 | 50 | - |
| 6. | MG201 | Fundamentals of Management | HMC | 3 | 3 | 0 | 0 | 3 | 0 | 25 | - | 25 | 50 | - |
| | | **Total** | | **23** | | | | | | | | | | |

## II Year: Fourth Semester

| S. No. | Code | Title | Area | Cr | L | T | P | TH | PH | CWS | PRS | MTE | ETE | PRE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. | EN252 | Environmental Engineering | AEC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 2. | CE202 | Mechanics of solids | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 3. | CE204 | Engineering Survey | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 4. | CE206 | Soil Mechanics | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 5. | CE208 | Hydraulics & Hydraulic Machines | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 6. | HU202 | Engineering Economics | HMC | 3 | 3 | 0 | 0 | 3 | 0 | 25 | - | 25 | 50 | - |
| | | **Total** | | **23** | | | | | | | | | | |

## III Year: Fifth Semester

| S. No. | Code | Title | Area | Cr | L | T | P | TH | PH | CWS | PRS | MTE | ETE | PRE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. | CE301 | Analysis of Determinate Structures | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 2. | CE303 | Design of RCC structures | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 3. | CE3xx | Departmental Elective Course-1 | DEC/ GEC | 4 | 3 | 0/1 | 2/0 | 3 | 0 | 15/ 25 | 15/0 | 30 /25 | 40/ 50 | - |
| 4. | CE3xx | Departmental Elective Course-2 | DEC/ GEC | 4 | 3 | 0/1 | 2/0 | 3 | 0 | 15/ 25 | 15/0 | 30 /25 | 40/ 50 | - |
| 5. | UExxx | Open Elective | OEC | 3 | 3 | 0 | 0 | 3 | 0 | 25 | - | 25 | 50 | - |
| 6. | HU301 | Technical Communication | HMC | 2 | 2 | 0 | 0 | 3 | 0 | 25 | - | 25 | 50 | - |
| | | **Total** | | **21** | **17** | | | | | | | | | |

## III Year: Sixth Semester

| S. No. | Code | Title | Area | Cr | L | T | P | TH | PH | CWS | PRS | MTE | ETE | PRE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. | CE302 | Analysis of Indeterminate Structures | DCC | 4 | 3 | 1 | 0 | 3 | 0 | 25 | - | 25 | 50 | - |
| 2. | CE304 | Geotechnical Engineering | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 3. | CE306 | Transportation Engineering | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 4. | CE3xx | Departmental Elective Course-3 | DEC/ GEC | 4 | 3 | 0/1 | 2/0 | 3 | 0 | 15/ 25 | 15/0 | 30 /25 | 40/ 50 | - |
| 5. | CE3xx | Departmental Elective Course-4 | DEC/ GEC | 4 | 3 | 0/1 | 2/0 | 3 | 0 | 15/ 25 | 15/0 | 30 /25 | 40/ 50 | - |
| 6. | HU304 | Professional Ethics and Human values | HMC | 2 | 2 | 0 | 0 | 3 | 0 | 25 | - | 25 | 50 | - |
| | | **Total** | | **22** | | | | | | | | | | |

## IV Year: Seventh Semester

| S. No. | Code | Title | Area | Cr | L | T | P | TH | PH | CWS | PRS | MTE | ETE | PRE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. | CE401 | B.Tech. Project-I | DCC | 4 | | | | | | | | | | |
| 2. | CE403 | Training Seminar | DCC | 2 | | | | | | | | | | |
| 3. | CE405 | Design of Steel Structures | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 4. | CE407 | Water Resources Engineering | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 5. | CE4xx | Departmental Elective Course-5 | DEC/ GEC | 4 | 3 | 0/1 | 2/0 | 3 | 0 | 15/ 25 | 15/0 | 30/ 25 | 40/ 50 | - |
| 6. | CE4xx | Departmental Elective Course-6 | DEC/ GEC | 4 | 3 | 0/1 | 2/0 | 3 | 0 | 15/ 25 | 15/0 | 30/ 25 | 40/ 50 | - |
| | | **Total** | | **22** | | | | | | | | | | |

## IV Year: Eighth Semester

| S. No. | Code | Title | Area | Cr | L | T | P | TH | PH | CWS | PRS | MTE | ETE | PRE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. | CE402 | B.Tech. Project-II | DCC | 8 | | | | | | | | | | |
| 2. | CE404 | Construction Technology & Management | DCC | 4 | 3 | 1 | 0 | 3 | 0 | 25 | - | 25 | 50 | - |
| 3. | CE4xx | Departmental Elective Course-7 | DEC/ GEC | 4 | 3 | 0/1 | 2/0 | 3 | 0 | 15/ 25 | 15/0 | 30 /25 | 40/ 50 | - |
| 4. | CE4xx | Departmental Elective Course-8 | DEC/ GEC | 4 | 3 | 0/1 | 2/0 | 3 | 0 | 15/ 25 | 15/0 | 30 /25 | 40/ 50 | - |
| | | **Total** | | **20** | | | | | | | | | | |

## List of Departmental Elective Courses

| S. No. | Subject Code | Subject | Elective NO. |
|---|---|---|---|
| 1. | CE305 | Mechanics of Materials | DEC-1 |
| 2. | CE307 | Advanced geo-technical engineering | |
| 3. | CE309 | Environmental Engineering Design | |
| 4. | CE311 | Photogrammetry and astronomy | |
| 5. | CE313 | Earthquake Technology | DEC-2 |
| 6. | CE315 | Rock engineering | |
| 7. | CE317 | Solid Waste Management & Air Pollution Control | |
| 8. | CE319 | Application of geo-informatics remote sensing and GIS in engineering | |
| 9. | CE308 | Disaster Management | DEC-3 |
| 10. | CE310 | Geo-technical processes | |
| 11. | CE312 | Water Power Systems & Design | |
| 12. | CE314 | Tunnel, ports and harbor engineering | |
| 13. | CE316 | Matrix methods of structural analysis | DEC-4 |
| 14. | CE318 | Analysis & Design of Underground Structures | |
| 15. | CE320 | Computational Hydraulics | |
| 16. | CE322 | Traffic and transportation planning | |
| 17. | CE409 | Advanced design of concrete structures | DEC-5 |
| 18. | CE411 | Interaction behavior of soil structure | |
| 19. | CE413 | Water Resources Management | |
| 20. | CE415 | Transportation safety and environment | |
| 21. | CE417 | Finite element method for 2-D structures | DEC-6 |
| 22. | CE419 | Soil Dynamics | |
| 23. | CE421 | Hydraulic structures and flood control works | |
| 24. | CE423 | Advanced transportation engineering | |
| 25. | CE406 | Advanced design of steel structures | DEC-7 |
| 26. | CE408 | Computational Geo-mechanics | |
| 27. | CE410 | Advanced Fluid Mechanics | |
| 28. | CE412 | Construction and design aspects in transportation engineering | |
| 29. | CE414 | Design of bridges | DEC-8 |
| 30. | CE416 | Geo-environmental and geo-hazard engineering | |
| 31. | CE418 | Ground water and seepage | |
| 32. | CE420 | Traffic Engineering | |

# DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

Computer Science and Engineering has revolutionized the way computing is done with study that spans the range from theory through programming to cutting-edge development of solutions applied across domains and offering an expansive career path. The Department of Computer Science and Engineering, established in 1989 has grown significantly in the last twenty five years. The department offers a variety of degrees for undergraduates & graduates in computing-related areas. All degree programs combine the teaching of core principles with hands-on laboratory experience, preparing students for exciting careers in industry and academia.

At undergraduate level the department offers B.Tech. in two disciplines, Computer Engineering and Software Engineering. The current intake for the same is 360 and 120 respectively. At graduate level the department offers both full-time and part-time M.Tech. degrees in disciplines of Computer Engineering and Software Engineering with an intake of 20 in each discipline for full-time and 10 in each discipline for part-time. The B.Tech. (Computer Engineering) programme has recently been accredited by NBA for 3 years.

The curriculum of the department has been designed in a way to provide the students with elementary concept learning as well as specialized current & practical engineering knowledge. Students build upon core curriculum and choose technical electives. The curriculum is further aligned with the requirements of the industries across the globe, and also with that of national and international universities. The major thrust areas are databases, software engineering, machine learning, web technologies, computer networks, information security, distributed processing, mobile communications, artificial intelligence, soft computing, and operating systems, amongst others. The students at all levels also enrich their educational experience by participating in projects & seminars and by undergoing internships & industrial training. Graduate level programs encourage both fundamental researches in computing and interdisciplinary research. Research projects in diverse areas under faculty guidance offer students a wide range of opportunities to gain experience while completing requirements for advanced

degrees. The programs seek to emphasize “hands-on” experience, problem solving skills, the creative process and responsible action.

The department also offers doctorate degree (PhD) in Computer Engineering. Innovative and interdisciplinary research is conducted under the adept guidance of faculty within the department in the domains of databases & data mining, software maintenance, software quality, big-data analytics, social media mining, information security and IoT.

The Department of Computer Science & Engineering has renowned, highly productive and professionally active faculty members, many of whom serve on international journal editorial boards and are senior members of professional organizations like ACM or IEEE. Attesting to the quality and impact of the research conducted are numerous publications by the faculty members in international/national journals/conferences covering cutting-edge research and prestigious awards won by our faculty. Several technical books have been authored by the faculty members of the department. Also, the research of faculty members is supported by various government research grants funded by AICTE, DST, UGC and CSIR.

The department takes immense interest in conducting professional activities such as organizing workshops, seminars and expert lectures to gain insight and impart awareness about the challenges in IT industry. Through professional development activities, faculty strives for excellence in teaching and contributions to the state-of-the-art. In the year 2016, an international conference technically sponsored by IEEE was organized by the department. The department has also been frequently organizing faculty development programs in the emerging fields of computing. An open access, peer reviewed journal titled “Software Engineering: An International Journal” was also started.

The department has active technical societies such as student chapter of “Computer Society of India” (CSI) and contributes significantly in professional activities undertaken by IEEE and IET student chapters of DTU. In order to channelize the tremendous potential of the students, CSI-DTU student branch organizes a technical festival named *“Phoenix”* which comprises of several technical events like LAN Gaming, Business

Plan, Animation, Web Designing, Algorithm design etc. The department also has a society of Software Engineering (SSE-DTU) for the engineers and the researchers in the software engineering discipline. The department also had a project by the name of “Unmanned Aircraft Systems in an autonomous aerial vehicle development”, which was carried out by the multidisciplinary students of DTU in collaboration with Lockheed Martin, a U.S. company.

The department facilities host both teaching and research laboratories supported by the department’s technical staff. In the last decade, the department has developed state-of-the-art laboratories in various fields of computer science and engineering. These are: Database Management and Data Mining Lab, Software Engineering Lab, Software Design and Testing, Artificial Intelligence Lab, Computer Architecture Lab, Networking Lab, Image Processing and Multimedia Lab, Computation and Programming Lab, Operating System Lab. The Labs are equipped with latest configuration PCs & software and are completely networked.

The Department of Computer Science & Engineering firmly believes in imparting the best possible training to its students & so actively seeks research based collaboration with leading organizations. Under university industry interface at DTU the department has collaboration with Samsung Software India Private Limited. Under this association the department offers MTech graduate degree in the discipline of Software Technology for the employees of Samsung. The department also has a collaborative research program with National University of Singapore (NUS) to provide an integrated research platform to both faculty and students.

Our students are highly sought after by the software industry and many of our under-graduates and graduates hold top positions in IT industry all over the globe. The majority of our undergraduates go on to work in leading market players like Google, Yahoo, Microsoft, Amazon, Cisco, Morgan Stanley, while others get involved in start-ups, work for government agencies, or continue their education in graduate school.

The department aims to establish itself as a leader in the field of computer science and engineering by advancing the quality of research & educational opportunities in line to the mission and vision of the university.

# BACHELOR OF TECHNOLOGY (COMPUTER ENGINEERING)

## I Year: First Semester

| Teaching Scheme | | | | | Contact Hours/ Week | | | Exam Duration (h) | | Relative Weights (%) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| S. No. | Subject Code | Course Title | Subject Area | Credit | L | T | P | Theory | Practical | CWS | PRS | MTE | ETE | PRE |
| **Group A** | | | | | | | | | | | | | | |
| 1 | MA101 | Mathematics - I | ASC | 4 | 3 | 1 | 0 | 3 | 0 | 25 | - | 25 | 50 | - |
| 2 | AP101 | Physics – I | ASC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 3 | AC101 | Chemistry | ASC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 4 | ME101 | Basic Mechanical Engineering | AEC | 4 | 4 | 0 | 0 | 3 | 0 | 25 | - | 25 | 50 | - |
| 5 | ME103 | Workshop Practice | AEC | 2 | 0 | 0 | 3 | 0 | 3 | - | 50 | - | - | 50 |
| 6 | HU101 | Communication Skills | HMC | 3 | 3 | 0 | 0 | 3 | 0 | 25 | - | 25 | 50 | - |
| | **Total** | | | **21** | 16 | 1 | 7 | | | | | | | |
| **Group B** | | | | | | | | | | | | | | |
| 1 | MA101 | Mathematics - I | ASC | 4 | 3 | 1 | 0 | 3 | 0 | 25 | - | 25 | 50 | - |
| 2 | AP101 | Physics – I | ASC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 3 | EE101 | Basic Electrical Engineering | AEC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 4 | CO101 | Programming Fundamentals | AEC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 5 | ME105 | Engineering Graphics | AEC | 2 | 0 | 0 | 3 | 0 | 3 | - | 50 | - | - | 50 |
| 6 | EN101 | Introduction to Environmental Science | AEC | 3 | 3 | 0 | 0 | 3 | 0 | 25 | - | 25 | 50 | - |
| | **Total** | | | **21** | 15 | 1 | 9 | | | | | | | |

## I Year: Second Semester

| Teaching Scheme | | | | | Contact Hours/ Week | | | Exam Duration (h) | | Relative Weights (%) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| S. No. | Subject Code | Course Title | Subject Area | Credit | L | T | P | Theory | Practical | CWS | PRS | MTE | ETE | PRE |
| **Group A** | | | | | | | | | | | | | | |
| 1 | MA102 | Mathematics -II | ASC | 4 | 3 | 1 | 0 | 3 | 0 | 25 | - | 25 | 50 | - |
| 2 | AP102 | Physics – II | ASC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 3 | EE102 | Basic Electrical Engineering | AEC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 4 | CO102 | Programming Fundamentals | AEC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 5 | ME102 | Engineering Graphics | AEC | 2 | 0 | 0 | 3 | 0 | 3 | - | 50 | - | - | 50 |
| 6 | EN102 | Introduction to Environmental Science | AEC | 3 | 3 | 0 | 0 | 3 | 0 | 25 | - | 25 | 50 | - |
| | **Total** | | | **21** | 15 | 1 | 9 | | | | | | | |
| **Group B** | | | | | | | | | | | | | | |
| 1 | MA102 | Mathematics -II | ASC | 4 | 3 | 1 | 0 | 3 | 0 | 25 | - | 25 | 50 | - |
| 2 | AP102 | Physics – II | ASC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 3 | AC102 | Chemistry | ASC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 4 | ME104 | Basic Mechanical Engineering | AEC | 4 | 4 | 0 | 0 | 3 | 0 | 25 | - | 25 | 50 | - |
| 5 | ME106 | Workshop Practice | AEC | 2 | 0 | 0 | 3 | 0 | 3 | - | 50 | - | - | 50 |
| 6 | HU102 | Communication Skills | HMC | 3 | 3 | 0 | 0 | 3 | 0 | 25 | - | 25 | 50 | - |
| | **Total** | | | **21** | 16 | 1 | 7 | | | | | | | |

## II Year: Third Semester

| S. No. | Code | Title | Area | Cr | L | T | P | TH | PH | CWS | PRS | MTE | ETE | PRE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. | EC261 | Analog Electronics | AEC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 2. | CO201 | Data Structures | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 3. | CO203 | Object Oriented Programming | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 4. | CO205 | Discrete Structures | DCC | 4 | 3 | 1 | 0 | 3 | 0 | 25 | - | 25 | 50 | - |
| 5. | CO207 | Modeling and Simulation) Engineering Analysis and Design | DCC | 4 | 3 | 1 | 0 | 3 | 0 | 25 | - | 25 | 50 | - |
| 6. | HU201 | Engineering Economics | HMC | 3 | 3 | 0 | 0 | 3 | - | 25 | - | 25 | 50 | - |
| | | **Total** | | **23** | | | | | | | | | | |

## II Year: Fourth Semester

| S. No. | Code | Title | Area | Cr | L | T | P | TH | PH | CWS | PRS | MTE | ETE | PRE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. | EC262 | Digital Electronics | AEC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 2. | CO202 | Database Management Systems | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 3. | CO204 | Operating Systems Design | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 4. | CO206 | Computer Organization and Architecture | DCC | 4 | 3 | 1 | 0 | 3 | 0 | 25 | - | 25 | 50 | - |
| 5. | CO208 | Algorithm Design and Analysis | DCC | 4 | 3 | 1 | 0 | 3 | 0 | 25 | - | 25 | 50 | - |
| 6. | MG202 | Fundamentals of Management | HMC | 3 | 3 | 0 | 0 | 3 | 0 | 25 | - | 25 | 50 | - |
| | | **Total** | | **23** | | | | | | | | | | |

## III Year: Fifth Semester

| S. No. | Code | Title | Area | Cr | L | T | P | TH | PH | CWS | PRS | MTE | ETE | PRE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. | CO301 | Software Engineering | DCC | **4** | **3** | **0** | **2** | **3** | **0** | **15** | **15** | **30** | **40** | **-** |
| 2. | CO303 | Theory of Computation | DCC | 4 | 3 | 1 | 0 | 3 | 0 | 25 | 0 | 25 | 50 | |
| 3. | CO3xx | Department Elective Course -1 | DEC/ GEC | 4 | 3 | 0/1 | 2/0 | 3 | 0 | 15/ 25 | 15/- | 30/ 25 | 40/ 50 | - |
| 4. | CO3xx | Department Elective Course -2 | DEC/ GEC | 4 | 3 | 0/1 | 2/0 | 3 | 0 | 15/ 25 | 15/- | 30/ 25 | 40/ 50 | - |
| 5. | UExxx | Open Elective | OEC | 3 | 3 | 0 | 0 | 3 | 0 | 25 | - | 25 | 50 | - |
| 6. | HU303 | Professional Ethics and Human values | HMC | 2 | 2 | 0 | 0 | 3 | 0 | 25 | - | 25 | 50 | -- |
| | | **Total** | | **21** | | | | | | | | | | |

## III Year: Sixth Semester

| S. No. | Code | Title | Area | Cr | L | T | P | TH | PH | CWS | PRS | MTE | ETE | PRE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. | CO302 | Compiler Design | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 2. | CO304 | Artificial Intelligence | DCC | 4 | 3 | 1 | 0 | 3 | 0 | 25 | - | 25 | 50 | - |
| 3. | CO306 | Computer Networks | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 4. | CO3xx | Department Elective Course -3 | DEC/ GEC | 4 | 3 | 0/1 | 2/0 | 3 | 0 | 15/ 25 | 15/- | 30/ 25 | 40/ 50 | - |
| 5. | CO3xx | Department Elective Course -4 | DEC/ GEC | 4 | 3 | 0/1 | 2/0 | 3 | 0 | 15/ 25 | 15/- | 30/ 25 | 40/ 50 | - |
| 6. | HU302 | Technical Communication | HMC | 2 | 0 | 0 | 3 | 0 | 0 | 25 | - | 25 | 50 | - |
| | | **Total** | | **22** | | | | | | | | | | |

## IV Year:Seventh Semester

| S. No. | Code | Title | Area | Cr | L | T | P | TH | PH | CWS | PRS | MTE | ETE | PRE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. | CO401 | B.Tech. Project-I | DCC | 4 | | | | | | | | | | |
| 2. | CO403 | Training Seminar | DCC | 2 | | | | | | | | | | |
| 3. | CO405 | Information and Network Security | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 4. | CO407 | Distributed Systems | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 5. | CO4xx | Department Elective Course -5 | DEC/ GEC | 4 | 3 | 0/1 | 2/0 | 3 | 0 | 15/ 25 | 15/- | 30/ 25 | 40/ 50 | - |
| 6. | CO4xx | Department Elective Course -6 | DEC/ GEC | 4 | 3 | 0/1 | 2/0 | 3 | 0 | 15/ 25 | 15/- | 30/ 25 | 40/ 50 | - |
| | | **Total** | | **22** | | | | | | | | | | |

## IV Year: Eighth Semester

| S. No. | Code | Title | Area | Cr | L | T | P | TH | PH | CWS | PRS | MTE | ETE | PRE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. | CO402 | B.Tech. Project-II | DCC | 8 | | | | | | | | | | |
| 2. | CO404 | Data-Warehousing and Data Mining | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 3. | CO4xx | Department Elective Course -7 | DEC/ GEC | 4 | 3 | 0/1 | 2/0 | 3 | 0 | 15/ 25 | 15/- | 30/ 25 | 40/ 50 | - |
| 4. | CO4xx | Department Elective Course -8 | DEC/ GEC | 4 | 3 | 0/1 | 2/0 | 3 | 0 | 15/ 25 | 15/- | 30/ 25 | 40/ 50 | - |
| | | **Total** | | **20** | | | | | | | | | | |

## List of Departmental Elective Courses

| S.No. | Subject Code | Subject | Elective no. |
|---|---|---|---|
| 1. | CO-305 | Information Theory and coding | DEC-1, 2 |
| 2. | CO-307 | Digital Signal Processing | |
| 3. | CO-309 | Advanced Data Structures | |
| 4. | CO-311 | Microprocessors and Interfacing | |
| 5. | CO-313 | Computer Graphics | |
| 6. | CO-315 | Optimization Techniques | |
| 7. | CO-317 | Soft Computing | |
| 8. | CO-319 | Enterprise Java programming | |
| 9. | CO-321 | Embedded Systems | |
| 10. | CO-323 | Data Compression | |
| 11. | CO-325 | Probability and Statistics | |
| 12. | CO-308 | Parallel Algorithms | DEC-3, 4 |
| 13. | CO-310 | Digital Image Processing | |
| 14. | CO-312 | Communications Engineering | |
| 15. | CO-314 | Optical Networks | |
| 16. | CO-316 | High Speed Networks | |
| 17. | CO-318 | Advanced Database Management Systems | |
| 18. | CO-320 | Multimedia System Design | |
| 19. | CO-322 | Real Time System | |
| 20. | CO-324 | Pattern Recognition | |
| 21. | CO-326 | Object Oriented Software Engineering | |

| S.No. | Subject Code | Subject | Elective no. |
|---|---|---|---|
| 22. | CO-409 | Robotics | DEC-5, 6 |
| 23. | CO-411 | Computer Vision | |
| 24. | CO-413 | VLSI Design | |
| 25. | CO-415 | Wireless and Mobile Computing | |
| 26. | CO-417 | Software Testing | |
| 27. | CO-419 | High Performance Computing | |
| 28. | CO-421 | Grid and Cluster Computing | |
| 29. | CO-423 | Swarm & Evolutionary Computing | |
| 30. | CO-425 | Machine Learning | |
| 31. | CO-427 | Web Technology | |
| 32. | CO-406 | Parallel Computer Architecture | DEC-7 and DEC-8 |
| 33. | CO-408 | Intellectual Property Rights | |
| 34. | CO-410 | Bio Informatics | |
| 35. | CO-412 | Software Quality and Metrics | |
| 36. | CO-414 | Big Data Analytics | |
| 37. | CO-416 | Cloud Computing | |
| 38. | CO-418 | Natural Language Processing | |
| 39. | CO-420 | Cyber Forensics | |
| 40. | CO-422 | Semantic Web and Web Mining | |
| 41. | CO-424 | Software Project Management | |

# BACHELOR OF TECHNOLOGY (SOFTWARE ENGINEERING)

## I Year: First Semester

| Teaching Scheme | | | | | Contact Hours/ Week | | | Exam Duration (h) | | Relative Weights (%) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| S. No. | Subject Code | Course Title | Subject Area | Credit | L | T | P | Theory | Practical | CWS | PRS | MTE | ETE | PRE |
| **Group A** | | | | | | | | | | | | | | |
| 1 | MA101 | Mathematics - I | ASC | 4 | 3 | 1 | 0 | 3 | 0 | 25 | - | 25 | 50 | - |
| 2 | AP101 | Physics – I | ASC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 3 | AC101 | Chemistry | ASC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 4 | ME101 | Basic Mechanical Engineering | AEC | 4 | 4 | 0 | 0 | 3 | 0 | 25 | - | 25 | 50 | - |
| 5 | ME103 | Workshop Practice | AEC | 2 | 0 | 0 | 3 | 0 | 3 | - | 50 | - | - | 50 |
| 6 | HU101 | Communication Skills | HMC | 3 | 3 | 0 | 0 | 3 | 0 | 25 | - | 25 | 50 | - |
| | **Total** | | | **21** | 16 | 1 | 7 | | | | | | | |
| **Group B** | | | | | | | | | | | | | | |
| 1 | MA101 | Mathematics - I | ASC | 4 | 3 | 1 | 0 | 3 | 0 | 25 | - | 25 | 50 | - |
| 2 | AP101 | Physics – I | ASC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 3 | EE101 | Basic Electrical Engineering | AEC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 4 | CO101 | Programming Fundamentals | AEC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 5 | ME105 | Engineering Graphics | AEC | 2 | 0 | 0 | 3 | 0 | 3 | - | 50 | - | - | 50 |
| 6 | EN101 | Introduction to Environmental Science | AEC | 3 | 3 | 0 | 0 | 3 | 0 | 25 | - | 25 | 50 | - |
| | **Total** | | | **21** | 15 | 1 | 9 | | | | | | | |

## I Year: Second Semester

| Teaching Scheme | | | | | Contact Hours/ Week | | | Exam Duration (h) | | Relative Weights (%) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| S. No. | Subject Code | Course Title | Subject Area | Credit | L | T | P | Theory | Practical | CWS | PRS | MTE | ETE | PRE |
| **Group A** | | | | | | | | | | | | | | |
| 1 | MA102 | Mathematics – II | ASC | 4 | 3 | 1 | 0 | 3 | 0 | 25 | - | 25 | 50 | - |
| 2 | AP102 | Physics – II | ASC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 3 | EE102 | Basic Electrical Engineering | AEC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 4 | CO102 | Programming Fundamentals | AEC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 5 | ME102 | Engineering Graphics | AEC | 2 | 0 | 0 | 3 | 0 | 3 | - | 50 | - | - | 50 |
| 6 | EN102 | Introduction to Environmental Science | AEC | 3 | 3 | 0 | 0 | 3 | 0 | 25 | - | 25 | 50 | - |
| | **Total** | | | **21** | 15 | 1 | 9 | | | | | | | |
| **Group B** | | | | | | | | | | | | | | |
| 1 | MA102 | Mathematics – II | ASC | 4 | 3 | 1 | 0 | 3 | 0 | 25 | - | 25 | 50 | - |
| 2 | AP102 | Physics – II | ASC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 3 | AC102 | Chemistry | ASC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 4 | ME104 | Basic Mechanical Engineering | AEC | 4 | 4 | 0 | 0 | 3 | 0 | 25 | - | 25 | 50 | - |
| 5 | ME106 | Workshop Practice | AEC | 2 | 0 | 0 | 3 | 0 | 3 | - | 50 | - | - | 50 |
| 6 | HU102 | Communication Skills | HMC | 3 | 3 | 0 | 0 | 3 | 0 | 25 | - | 25 | 50 | - |
| | **Total** | | | **21** | 16 | 1 | 7 | | | | | | | |

## II Year: Third Semester

| S. No. | Code | Title | Area | Cr | L | T | P | TH | PH | CWS | PRS | MTE | ETE | PRE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. | EC261 | Analog Electronics | AEC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 2. | SE201 | Data Structures | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 3. | SE203 | Object Oriented Programming | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 4. | SE205 | Web Technology | DCC | 4 | 3 | 0 | 0 | 3 | 0 | 25 | - | 25 | 50 | - |
| 5. | SE207 | Engineering Analysis and Design(Modelling and Simulation) | DCC | 4 | 3 | 1 | 0 | 3 | 0 | 25 | - | 25 | 50 | - |
| 6. | HU201 | Engineering Economics | HMC | 3 | 3 | 0 | 0 | 3 | 0 | 25 | - | 25 | 50 | - |
| | | **Total** | | **23** | | | | | | | | | | |

## II Year: Fourth Semester

| S. No. | Code | Title | Area | Cr | L | T | P | TH | PH | CWS | PRS | MTE | ETE | PRE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. | EC252 | Digital Electronics | AEC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 2. | SE202 | Software Engineering | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 3. | SE204 | Computer Organization & Architecture | DCC | 4 | 3 | 1 | 0 | 3 | 0 | 25 | - | 25 | 50 | - |
| 4. | SE206 | Database Management Systems | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 5. | SE208 | Discrete Structures | DCC | 4 | 3 | 1 | 0 | 3 | 0 | 25 | - | 25 | 50 | - |
| 6. | MG202 | Fundamentals of Management | HMC | 3 | 3 | 0 | 0 | 3 | 0 | 25 | - | 25 | 50 | - |
| | | **Total** | | **23** | | | | | | | | | | |

## III Year: Fifth Semester

| S. No. | Code | Title | Area | Cr | L | T | P | TH | PH | CWS | PRS | MTE | ETE | PRE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. | SE301 | Object Oriented Software Engineering | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 2. | SE303 | Algorithm Design & Analysis | DCC | 4 | 3 | 0 | | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 3. | SE3xx | Departmental Elective Course -1 | DEC/ GEC | 4 | 3 | 0/1 | 2/0 | 3 | 0 | 15/ 25 | 15/- | 30/ 25 | 40/ 50 | - |
| 4. | SE3xx | Departmental Elective Course -2 | DEC/ GEC | 4 | 3 | 0/1 | 2/0 | 3 | 0 | 15/ 25 | 15/- | 30/ 25 | 40/ 50 | |
| 5. | UExxx | Open Elective Course | OEC | 3 | 3 | 0 | 0 | 3 | 0 | 25 | - | 25 | 50 | - |
| 6. | HU301 | Professional Ethics & Values | HMC | 2 | 2 | 0 | 0 | 3 | 0 | 25 | - | 25 | 50 | - |
| | | **Total** | | **21** | | | | | | | | | | |

## III Year: Sixth Semester

| S. No. | Code | Title | Area | Cr | L | T | P | TH | PH | CWS | PRS | MTE | ETE | PRE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. | SE302 | Software Testing | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 2. | SE304 | Operating System | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 3. | SE306 | Compiler Design | DCC | 4 | 3 | 1 | 0 | 3 | 0 | 25 | - | 25 | 50 | - |
| 4. | SE3xx | Departmental Elective Course -3 | DEC/ GEC | 4 | 3 | 0/1 | 2/0 | 3 | 0 | 15/ 25 | 15/- | 30/ 25 | 40/ 50 | - |
| 5. | SE3xx | Departmental Elective Course -4 | DEC/ GEC | 4 | 3 | 0/1 | 2/0 | 3 | 0 | 15/ 25 | 15/- | 30/ 25 | 40/ 50 | - |
| 6. | HU302 | Technical Communication | HMC | 2 | 2 | 0 | 0 | 3 | 0 | 25 | - | 25 | 50 | -- |
| | | **Total** | | **22** | | | | | | | | | | |

## IV Year: Seventh Semester

| S. No. | Code | Title | Area | Cr | L | T | P | TH | PH | CWS | PRS | MTE | ETE | PRE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. | SE401 | B.Tech. Project-I | DCC | 4 | | | | | | | | | | |
| 2. | SE403 | Training Seminar | DCC | 2 | | | | | | | | | | |
| 3. | SE405 | Software Project Management | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 4. | SE407 | Computer Networks | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 5. | SE4xx | Departmental Elective Course -5 | DEC/ GEC | 4 | 3 | 0/1 | 2/0 | 3 | 0 | 15/ 25 | 15/- | 30/ 25 | 40/ 50 | |
| 6. | SE4xx | Departmental Elective Course- 6 | DEC/ GEC | 4 | 3 | 0/1 | 2/0 | 3 | 0 | 15/ 25 | 15/- | 30/ 25 | 40/ 50 | |
| | | **Total** | | **22** | | | | | | | | | | |

## IV Year: Eighth Semester

| S. No. | Code | Title | Area | Cr | L | T | P | TH | PH | CWS | PRS | MTE | ETE | PRE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. | SE402 | B.Tech. Project-II | DCC | 8 | | | | | | | | | | |
| 2. | SE404 | Empirical Software Engineering | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 3. | SE4xx | Departmental Elective Course-7 | DEC/ GEC | 4 | 3 | 0/1 | 2/0 | 3 | 0 | 15/25 | 15/- | 30 /25 | 40/ 50 | |
| 4. | SE4xx | Departmental Elective Course- 8 | DEC/ GEC | 4 | 3 | 0/1 | 2/0 | 3 | 0 | 15/ 25 | 15/- | 30/ 25 | 40/ 50 | |
| | | **Total** | | **20** | | | | | | | | | | |

## List of Departmental Elective Courses

| S. No. | Subject Code | Subject | **Elective no.** |
|---|---|---|---|
| 1. | SE-305 | Software Requirement Engineering | DEC-1, 2 |
| 2. | SE-307 | Computer Graphics | |
| 3 | SE-309 | Information Theory and coding | |
| 4. | SE-311 | Digital Signal Processing | |
| 5. | SE-313 | Advanced Data Structures | |
| 6. | SE-315 | Microprocessor & Interfacing | |
| 7. | SE-317 | Distributed Systems | |
| 8. | SE-319 | Soft Computing | |
| 9. | SE-321 | Artificial Intelligence | |
| 10. | SE-323 | Theory of Computation | |
| 11. | SE-308 | Software Reliability | DEC-3, 4 |
| 12. | SE-310 | Multimedia Systems | |
| 13. | SE-312 | Parallel Computer Architecture | |
| 14. | SE-314 | Bio-Informatics | |
| 15. | SE-316 | Natural Language Processing | |
| 16 | SE-318 | Advanced Database Management Systems | |
| 17. | SE-320 | Data Compression | |
| 18. | SE-322 | Real Time Systems | |
| 19. | SE-324 | Parallel Algorithms | |
| 20. | SE-409 | Software Maintenance | DEC-5, 6 |
| 21. | SE-411 | Software Quality & Metrics | |
| 22. | SE-413 | Grid & Cluster Computing | |
| 23. | SE-415 | Pattern Recognition | |
| 24. | SE-417 | Data Warehousing& Data Mining | |
| 25. | SE-419 | Cyber-Forensics | |
| 26. | SE-421 | Robotics | |
| 27. | SE-423 | Machine Learning | |
| 28. | SE-425 | Intellectual Property Rights & Cyber Laws | |
| 29. | SE-406 | Advances in Software Engineering | DEC-7,8 |
| 30.. | SE-408 | Information & Network Security | |
| 31. | SE-410 | Swarm & Evolutionary Computing | |
| 32. | SE-412 | Semantic Web and Web Mining | |
| 33. | SE-414 | Cloud Computing | |
| 34. | SE-416 | Big Data Analytics | |
| 35. | SE-418 | Wireless and Mobile Computing | |
| 36. | SE-420 | Agile Software Process | |

# DEPARTMENT OF ELECTRICAL ENGINEERING

The Department of Electrical Engineering has grown significantly since its inception in 1941. The year 2016 marked the 75th year of Excellence (Platinum Jubilee) for both the university and the department in academic, research and innovation. The goal of the department is to provide quality education at undergraduate and postgraduate levels and undertake cutting edge research in various areas of Electrical Engineering. The department also aims to develop active collaboration with various industries in the power sector, energy transportation and industrial automation sector. The department has earned itself a very good reputation in the national and global academic network. Currently, the department has an annual undergraduate intake of 240 students. With effect from the current academic session the two UG programs being offered by the department have been merged. The B. Tech (EE) program offered by the department has recently been accredited by the NBA for three years under Tier-1 format. The department is also offering a B.Tech. (Evening) program with an intake of **60** students.

At the post graduate level, the department is offering two M.Tech. programs in Control and Instrumentation and Power Systems with a combined intake of 48 students. The department is also running part time (evening) PG program in Power Electronic Systems for DMRC (under MOU) since 2012-13. In addition to the above, the department offers regular Ph. D programs in various areas of specialization in Electrical Engineering. These include Intelligent Control, Optimization, Power Quality, Renewable Energy Sources, Smart grids, Power System Operation and Control, Power System Dynamics and Stability, Flexible AC Transmission (FACTS), HVDC, Electric Drives and Hybrid Electric Vehicles.

The department currently has 17 laboratories equipped with state-of-the art equipment and latest version of latest software platforms. The laboratories are equipped with sophisticated equipment, test setups, FPGA based data acquisition systems, embedded controllers, Digital Signal Processors, Medium power Inverter-converters, various Electrical Drives, PLCs, Power analyzers, spectrum analyzers, etc to name a few. The department is involved in carrying out several sponsored R & D projects funded by national agencies like AICTE and DST. Currently, sponsored projects from

the DST and the AICTE amounting to more than Rs. 2 crores are currently underway in the department. The department is also engaged in consultancies in various fields of Electrical Engineering. The department also organizes National and International Conferences, Faculty Development Programs, Workshops and Expert Lectures from time to time.

Faculty members of the department have been regularly contributing towards International and National Journals of repute like IEEE Transactions and IEEE Proceedings, IET, Journals in Electrical Engineering from Elsevier, etc. along with Proceedings of National and International Conferences. The department also generously contributes to professional activities undertaken by the IEEE and the IET Delhi chapters. Several popular technical books have been authored by the faculty members of the department. Some faculty members have acquired patents for their research. The department plans to have new laboratories for Testing, Calibration & Standardization, Photovoltaic and Energy Storage, Power Quality & Energy Conservation, Electric Drives, Industrial Automation, Bio-Instrumentation, Distribution and Automation Centre and SCADA systems.

The Department of Electrical Engineering has developed into one of the best departments of the University. The placement trend has shown that the students of the department have been successful in getting lucrative jobs based on their interests in different fields. Top global recruiters such as Fujikara, Qualcomm, Mckinsey have offered placements to the students of this department with a package of over Rs. 10 Lakh per annum. Other recruiters from core engineering and allied sectors like Thorogood, Deloitte, Vedanta group, Wipro, Tata Power, Reliance, Axtria, PWC, ZS Associates, Technip, Bechtel, L&T, United Health Group have recruited students from this department with attractive packages. This consistent placement record illustrates the commitment and contribution of this department to the success story of the University. The graduates of the department are occupying important positions in both government as well as corporate sector with many of them having joined programs of higher studies in India and abroad.

The Department has been hosting International and national conferences, workshops and invited lecture series every year. The department has the distinction of organizing

two MHRD sponsored GIAN courses in the University. The first Gian course was delivered by Prof. Saifur Rahman, Fellow IEEE and Professor of Electrical and Computer Engineering at the Advanced Research Institute, Virginia Tech, USA. The second Gian course was delivered by Prof. A.K.S. Bhat, IEEE Fellow and Professor of Electrical and Computer Engineering at the University of Victoria, Canada. It is the agenda of the department to further augment the professional activities. The students are motivated for technical and creative activities besides classroom teaching and laboratory exercises through technical fests like TROIKA, organized under the IEEE student chapter and Renaissance, organized by the IET student chapter DTU. They are also encouraged to participate in various group learning and discussion activities in addition to presentation of seminar and term paper presentations on individual basis. Emphasis is laid on computer based assignments through modelling and simulation of various Electrical Systems in well-equipped laboratories.

# BACHELOR OF TECHNOLOGY (ELECTRICAL ENGINEERING)

## I Year: First Semester

| Teaching Scheme | | | | | Contact Hours/ Week | | | Exam Duration (h) | | Relative Weights (%) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| S. No. | Subject Code | Course Title | Subject Area | Credit | L | T | P | Theory | Practical | CWS | PRS | MTE | ETE | PRE |
| **Group A** | | | | | | | | | | | | | | |
| 1 | MA101 | Mathematics - I | ASC | 4 | 3 | 1 | 0 | 3 | 0 | 25 | - | 25 | 50 | - |
| 2 | AP101 | Physics – I | ASC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 3 | AC101 | Chemistry | ASC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 4 | ME101 | Basic Mechanical Engineering | AEC | 4 | 4 | 0 | 0 | 3 | 0 | 25 | - | 25 | 50 | - |
| 5 | ME103 | Workshop Practice | AEC | 2 | 0 | 0 | 3 | 0 | 3 | - | 50 | - | - | 50 |
| 6 | HU101 | Communication Skills | HMC | 3 | 3 | 0 | 0 | 3 | 0 | 25 | - | 25 | 50 | - |
| | **Total** | | | **21** | 16 | 1 | 7 | | | | | | | |

| Group B | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | MA101 | Mathematics - I | ASC | 4 | 3 | 1 | 0 | 3 | 0 | 25 | - | 25 | 50 | - |
| 2 | AP101 | Physics – I | ASC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 3 | EE101 | Basic Electrical Engineering | AEC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 4 | CO101 | Programming Fundamentals | AEC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 5 | ME105 | Engineering Graphics | AEC | 2 | 0 | 0 | 3 | 0 | 3 | - | 50 | - | - | 50 |
| 6 | EN101 | Introduction to Environmental Science | AEC | 3 | 3 | 0 | 0 | 3 | 0 | 25 | - | 25 | 50 | - |
| | **Total** | | | **21** | 15 | 1 | 9 | | | | | | | |

## I Year: Second Semester

| Teaching Scheme | | | | | Contact Hours/ Week | | | Exam Duration (h) | | Relative Weights (%) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **S. No.** | **Subject Code** | **Course Title** | **Subject Area** | **Credit** | **L** | **T** | **P** | **Theory** | **Practical** | **CWS** | **PRS** | **MTE** | **ETE** | **PRE** |
| **Group A** | | | | | | | | | | | | | | |
| 1 | MA102 | Mathematics-II | ASC | 4 | 3 | 1 | 0 | 3 | 0 | 25 | - | 25 | 50 | - |
| 2 | AP102 | Physics – II | ASC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 3 | EE102 | Basic Electrical Engineering | AEC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 4 | CO102 | Programming Fundamentals | AEC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 5 | ME102 | Engineering Graphics | AEC | 2 | 0 | 0 | 3 | 0 | 3 | - | 50 | - | - | 50 |
| 6 | EN102 | Introduction to Environmental Science | AEC | 3 | 3 | 0 | 0 | 3 | 0 | 25 | - | 25 | 50 | - |
| | **Total** | | | **21** | 15 | 1 | 9 | | | | | | | |
| **Group B** | | | | | | | | | | | | | | |

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | MA102 | Mathematics- II | ASC | 4 | 3 | 1 | 0 | 3 | 0 | 25 | - | 25 | 50 | - |
| 2 | AP102 | Physics – II | ASC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 3 | AC102 | Chemistry | ASC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 4 | ME104 | Basic Mechanical Engineering | AEC | 4 | 4 | 0 | 0 | 3 | 0 | 25 | - | 25 | 50 | - |
| 5 | ME106 | Workshop Practice | AEC | 2 | 0 | 0 | 3 | 0 | 3 | - | 50 | - | - | 50 |
| 6 | HU102 | Communication Skills | HMC | 3 | 3 | 0 | 0 | 3 | 0 | 25 | - | 25 | 50 | - |
| | **Total** | | | **21** | 16 | 1 | 7 | | | | | | | |

## II Year: Third Semester

| S. No. | Code | Title | Area | Cr | L | T | P | TH | PH | CWS | PRS | MTE | ETE | PRE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. | MC261 | Numerical and Engineering Optimization Methods | AEC | 4 | 3 | 1 | 0 | 3 | 0 | 25 | - | 25 | 50 | - |
| 2. | EE201 | Network Analysis & Synthesis | DCC | 4 | 3 | 1 | 0 | 3 | 0 | 25 | - | 25 | 50 | - |
| 3. | EE203 | Electronic Devices and Circuits | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 25 | 20 | 40 | - |
| 4. | EE205 | Electromechanical Energy Conversion and Transformer | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 25 | 20 | 40 | - |
| 5. | EE207 | Engineering Analysis and Design | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 25 | 20 | 40 | - |
| 6. | HU201 | Engineering Economics | HMC | 3 | 3 | 0 | 0 | 3 | 0 | 25 | - | 25 | 50 | - |
| | | **Total** | | **23** | | | | | | | | | | |

## II Year: Fourth Semester

| S. No. | Code | Title | Area | Cr | L | T | P | TH | PH | CWS | PRS | MTE | ETE | PRE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. | ME252 | Power Plant Engineering | AEC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 25 | 20 | 40 | - |
| 2. | EE202 | Electromagnetic Field Theory | DCC | 4 | 3 | 1 | 0 | 3 | 0 | 25 | - | 25 | 50 | - |
| 3. | EE204 | Digital circuits and System | DCC | 4 | 3 | 1 | 0 | 3 | 0 | 25 | - | 25 | 50 | - |
| 4. | EE206 | Control Systems | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 25 | 20 | 40 | - |
| 5. | EE208 | Asynchronous and Synchronous Machines | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 25 | 20 | 40 | - |
| 6. | MG202 | Fundamentals of Management | HMC | 3 | 3 | 0 | 0 | 3 | 0 | 25 | - | 25 | 50 | - |
| | | **Total** | | **23** | | | | | | | | | | |

## III Year: Fifth Semester

| S. No. | Code | Title | Area | Cr | L | T | P | TH | PH | CWS | PRS | MTE | ETE | PRE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. | EE301 | Power Electronics | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 25 | 20 | 40 | - |
| 2. | EE303 | Power Transmission and Distribution | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 25 | 20 | 40 | - |
| 3. | EExxx | Departmental Elective Course- 1 | DEC/ GEC | 4 | 3 | 0/1 | 2/0 | 3 | 0 | 15/ 25 | 25/0 | 20/ 25 | 40/ 50 | - |
| 4. | EExxx | Departmental Elective Course- 2 | DEC/ GEC | 4 | 3 | 0/1 | 2/0 | 3 | 0 | 15/ 25 | 25/0 | 20/ 25 | 40/ 50 | - |
| 5. | UExxx | Open Elective Course | OEC | 3 | 3 | 0 | 0 | 3 | 0 | 25 | - | 25 | 50 | - |
| 6. | HU303 | Professional Ethics and Human Values | HMC | 2 | 3 | 0 | 0 | 3 | 0 | 25 | - | 25 | 50 | - |
| | | **Total** | | **21** | | | | | | | | | | |

## III Year:Sixth Semester

| S. No. | Code | Title | Area | Cr | L | T | P | TH | PH | CWS | PRS | MTE | ETE | PRE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. | EE302 | Electric Drives | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 25 | 20 | 40 | - |
| 2. | EE304 | Power System Analysis | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 25 | 20 | 40 | - |
| 3. | EE306 | Microprocessors & Microcontroller Applications | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 25 | 20 | 40 | - |
| 4. | EEXXX | Departmental Elective Course- 3 | DEC/ GEC | 4 | 3 | 0/1 | 2/0 | 3 | 0 | 15/ 25 | 25/0 | 20/ 25 | 40/ 50 | - |
| 5. | EEXXX | Departmental Elective Course- 4 | DEC/ GEC | 4 | 3 | 0/1 | 2/0 | 3 | 0 | 15/ 25 | 25/0 | 20/ 25 | 40/ 50 | - |
| 6. | HU302 | Technical Communication | HMC | 2 | 3 | 0 | 0 | 3 | 0 | 25 | - | 25 | 50 | - |
| | | **Total** | | **22** | | | | | | | | | | |

## IV Year: Seventh Semester

| S. No. | Code | Title | Area | Cr | L | T | P | TH | PH | CWS | PRS | MTE | ETE | PRE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. | EE401 | B.Tech Project-I | DCC | 4 | | | | | | | | | | |
| 2. | EE403 | Training Seminar | DCC | 2 | | | | | | | | | | |
| 3. | EE405 | Digital Signal Processing | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 25 | 20 | 40 | - |
| 4. | EE407 | Instrumentation and Measurement | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 25 | 20 | 40 | - |
| 5. | EE409 | Switchgear and Protection | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 25 | 20 | 40 | - |
| 6. | EE4xx | Departmental Elective Course- 5 | DEC/ GEC | 4 | 3 | 0/1 | 2/0 | 3 | 0 | 15/ 25 | 25/0 | 20/ 25 | 40/ 50 | - |
| | | **Total** | | **22** | | | | | | | | | | |

## IV Year : Eighth Semester

| S. No. | Code | Title | Area | Cr | L | T | P | TH | PH | CWS | PRS | MTE | ETE | PRE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. | EE402 | B.Tech Project-II | DCC | 8 | | | | | | | | | | |
| 2. | EE4xx | Departmental Elective Course-6 | DEC/ GEC | 4 | 3 | 0/1 | 2/0 | 3 | 0 | 15/ 25 | 25/0 | 20/ 25 | 40/ 50 | |
| 3. | EE4xx | Departmental Elective Course-7 | DEC/ GEC | 4 | 3 | 0/1 | 2/0 | 3 | 0 | 15/ 25 | 25/0 | 20/ 25 | 40/ 50 | |
| 4. | EE4xx | Departmental Elective Course- 8 | DEC/ GEC | 4 | 3 | 0/1 | 2/0 | 3 | 0 | 15/ 25 | 25/0 | 20/ 25 | 40/ 50 | |
| | | **Total** | | **20** | | | | | | | | | | |

## List of Departmental Elective Courses

| S. No. | Elective Code | Title of Elective | Elective no. |
|---|---|---|---|
| 1. | EE-305 | Signals and Systems | DEC 1 and DEC 2 |
| 2. | EE-307 | Power Station Practices | |
| 3. | EE-309 | Special Electrical Machines | |
| 4. | EE-311 | Energy Efficient Motors | |
| 5. | EE-313 | Linear Integrated Circuits | |
| 6. | EE-315 | Digital Control and State Variable Analysis | |
| 7. | EE-317 | Renewable Energy Systems | |
| 8. | EE-319 | Digital System Design | |
| 9. | EE-321 | Soft Computing Techniques | |
| 10. | EE-323 | CMOS Analog Integrated Circuits | |

| S. No. | Elective Code | Title of Elective | Elective no. |
|---|---|---|---|
| 11. | EE-308 | Power System Operation and Control | DEC 3 and DEC 4 |
| 12. | EE-310 | Communication Systems | |
| 13. | EE-312 | Power System Optimization | |
| 14. | EE-314 | Power Electronic Applications to Power Systems | |
| 15. | EE-316 | Electrical Energy Storage Systems | |
| 16. | EE-318 | Switched Mode Power Supplies | |
| 17. | EE-320 | VLSI Design | |
| 18. | EE-322 | IC Technology | |
| 19. | EE-324 | Design, Estimation & Costing of Industrial Electrical Systems | |
| 20. | EE-326 | Process Instrumentation & Control | |
| 21. | EE-411 | Power System Modeling & Simulation | DEC 5 |
| 22. | EE-413 | Power System Reliability | |
| 23. | EE-415 | Design of Electrical Machines | |
| 24. | EE-417 | Advanced Topics in Electrical Machines | |
| 25. | EE-419 | Pulse Width Modulation for Power converters | |
| 26. | EE-421 | Advanced Communications | |
| 27. | EE-423 | Microcontroller and Embedded Systems | |
| 28. | EE-425 | Advanced Analog Circuit Design | |
| 29. | EE-427 | Computer Architecture | |

| S. No. | Elective Code | Title of Elective | Elective no. |
|---|---|---|---|
| 30. | EE-404 | Power System Dynamics & Stability | DEC 6, DEC 7 and DEC 8 |
| 31. | EE-406 | Distribution Systems Analysis & Control | |
| 32. | EE-408 | Restructured Power Systems | |
| 33. | EE-410 | Power System Planning | |
| 34. | EE-412 | High Voltage Engineering | |
| 35. | EE-414 | Distributed Generation | |
| 36. | EE-416 | Grid Integration of Renewable Energy Sources | |
| 37. | EE-418 | Selected Topics in Power Electronics | |
| 38. | EE-420 | Power Quality | |
| 39. | EE-422 | HVDC Transmission | |
| 40. | EE-424 | Flexible AC Transmission Systems | |
| 41. | EE-426 | Smart Grid | |
| 42. | EE-428 | Digital Image Processing | |
| 43. | EE-430 | Filter Design | |
| 44. | EE-432 | AI and Expert Systems | |
| 45. | EE-434 | Computer Control of Processes | |
| 46. | EE-436 | Nonlinear and Adaptive Control | |
| 47. | EE-438 | DSP Applications to Electromechanical Systems | |
| 48. | EE-440 | SCADA & Energy Management Systems | |
| 49. | EE-442 | Robotics and Machine Vision | |
| 50. | EE-444 | Utilization of Electrical Energy & Traction | |
| 51. | EE-446 | Data Communication and Computer Networks | |

# BACHELOR OF TECHNOLOGY
# (ELECTRICAL & ELECTRONICS ENGINEERING)
## For batches 2015 and 2016

### I Year: First Semester

| Teaching Scheme | | | | | Contact Hours/ Week | | | Exam Duration (h) | | Relative Weights (%) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| S. No. | Subject Code | Course Title | Subject Area | Credit | L | T | P | Theory | Practical | CWS | PRS | MTE | ETE | PRE |
| **Group A** | | | | | | | | | | | | | | |
| 1 | MA101 | Mathematics - I | ASC | 4 | 3 | 1 | 0 | 3 | 0 | 25 | - | 25 | 50 | - |
| 2 | AP101 | Physics – I | ASC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 3 | AC101 | Chemistry | ASC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 4 | ME101 | Basic Mechanical Engineering | AEC | 4 | 4 | 0 | 0 | 3 | 0 | 25 | - | 25 | 50 | - |
| 5 | ME103 | Workshop Practice | AEC | 2 | 0 | 0 | 3 | 0 | 3 | - | 50 | - | - | 50 |
| 6 | HU101 | Communication Skills | HMC | 3 | 3 | 0 | 0 | 3 | 0 | 25 | - | 25 | 50 | - |
| | **Total** | | | **21** | 16 | 1 | 7 | | | | | | | |
| **Group B** | | | | | | | | | | | | | | |
| 1 | MA101 | Mathematics - I | ASC | 4 | 3 | 1 | 0 | 3 | 0 | 25 | - | 25 | 50 | - |
| 2 | AP101 | Physics – I | ASC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 3 | EE101 | Basic Electrical Engineering | AEC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 4 | CO101 | Programming Fundamentals | AEC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 5 | ME105 | Engineering Graphics | AEC | 2 | 0 | 0 | 3 | 0 | 3 | - | 50 | - | - | 50 |
| 6 | EN101 | Introduction to Environmental Science | AEC | 3 | 3 | 0 | 0 | 3 | 0 | 25 | - | 25 | 50 | - |
| | **Total** | | | **21** | 15 | 1 | 9 | | | | | | | |

## I Year: Second Semester

| Teaching Scheme | | | | | Contact Hours/ Week | | | Exam Duration (h) | | Relative Weights (%) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| S. No. | Subject Code | Course Title | Subject Area | Credit | L | T | P | Theory | Practical | CWS | PRS | MTE | ETE | PRE |
| **Group A** | | | | | | | | | | | | | | |
| 1 | MA102 | Mathematics -II | ASC | 4 | 3 | 1 | 0 | 3 | 0 | 25 | - | 25 | 50 | - |
| 2 | AP102 | Physics – II | ASC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 3 | EE102 | Basic Electrical Engineering | AEC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 4 | CO102 | Programming Fundamentals | AEC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 5 | ME102 | Engineering Graphics | AEC | 2 | 0 | 0 | 3 | 0 | 3 | - | 50 | - | - | 50 |
| 6 | EN102 | Introduction to Environmental Science | AEC | 3 | 3 | 0 | 0 | 3 | 0 | 25 | - | 25 | 50 | - |
| | **Total** | | | **21** | 15 | 1 | 9 | | | | | | | |
| **Group B** | | | | | | | | | | | | | | |
| 1 | MA102 | Mathematics -II | ASC | 4 | 3 | 1 | 0 | 3 | 0 | 25 | - | 25 | 50 | - |
| 2 | AP102 | Physics – II | ASC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 3 | AC102 | Chemistry | ASC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 4 | ME104 | Basic Mechanical Engineering | AEC | 4 | 4 | 0 | 0 | 3 | 0 | 25 | - | 25 | 50 | - |
| 5 | ME106 | Workshop Practice | AEC | 2 | 0 | 0 | 3 | 0 | 3 | - | 50 | - | - | 50 |
| 6 | HU102 | Communication Skills | HMC | 3 | 3 | 0 | 0 | 3 | 0 | 25 | - | 25 | 50 | - |
| | **Total** | | | **21** | 16 | 1 | 7 | | | | | | | |

## II Year: Third Semester

| S. No. | Code | Title | Area | Cr | L | T | P | TH | PH | CWS | PRS | MTE | ETE | PRE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. | MC261 | Numerical and Engineering Optimization Methods | AEC | 4 | 3 | 1 | 0 | 3 | 0 | 25 | - | 25 | 50 | - |
| 2. | EL201 | Circuits and Systems | DCC | 4 | 3 | 1 | 0 | 3 | 0 | 25 | - | 25 | 50 | - |
| 3. | EL203 | Electronic Devices and Circuits | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 25 | 20 | 40 | - |
| 4. | EL205 | Electromechanical Energy Conversion and Transformer | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 25 | 20 | 40 | - |
| 5. | EL207 | Engineering Analysis and Design | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 25 | 20 | 40 | - |
| 6. | HU201 | Engineering Economics | HMC | 3 | 3 | 0 | 0 | 3 | 0 | 25 | - | 25 | 50 | - |
| | | **Total** | | **23** | | | | | | | | | | |

## II Year: Fourth Semester

| S. No. | Code | Title | Area | Cr | L | T | P | TH | PH | CWS | PRS | MTE | ETE | PRE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. | EE252 | Introduction to Electromagnetics | AEC | 4 | 3 | 0 | 2 | 3 | 0 | 25 | - | 25 | 50 | - |
| 2. | EL202 | Linear Integrated Circuits | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 25 | 20 | 40 | - |
| 3. | EL204 | Digital circuits and System | DCC | 4 | 3 | 1 | 0 | 3 | 0 | 15 | 25 | 20 | 40 | - |
| 4. | EL206 | Control Systems | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 25 | 20 | 40 | - |
| 5. | EL208 | Asynchronous and Synchronous Machines | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 25 | 20 | 40 | - |
| 6. | MG202 | Fundamentals of Management | HMC | 3 | 3 | 0 | 0 | 3 | 0 | 25 | - | 25 | 50 | - |
| | | **Total** | | **23** | | | | | | | | | | |

## III Year: Fifth Semester

| S. No. | Code | Title | Area | Cr | L | T | P | TH | PH | CWS | PRS | MTE | ETE | PRE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. | EL301 | Power Electronics | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 25 | 20 | 40 | - |
| 2. | EL303 | Power Transmission and Distribution | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 25 | 20 | 40 | - |
| 3. | EL3xx | Departmental Elective Course- 1 | DEC/ GEC | 4 | 3 | 0/1 | 2/0 | 3 | 0 | 15/ 25 | 25/0 | 20/ 25 | 40/ 50 | |
| 4. | EL3xx | Departmental Elective Course- 2 | DEC/ GEC | 4 | 3 | 0/1 | 2/0 | 3 | 0 | 15/ 25 | 25/0 | 20/ 25 | 40/ 50 | |
| 5. | UExxx | Open Elective Course | OEC | 3 | 3 | 0 | 0 | 3 | 0 | 25 | | 25 | 50 | |
| 6. | HU303 | Professional Ethics and Human Values | HMC | 2 | 2 | 0 | 0 | 3 | 0 | 25 | - | 25 | 50 | - |
| | | **Total** | | **21** | | | | | | | | | | |

## III Year: Sixth Semester

| S. No. | Code | Title | Area | Cr | L | T | P | TH | PH | CWS | PRS | MTE | ETE | PRE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. | EL302 | Communication Systems-I | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 25 | 20 | 40 | - |
| 2. | EL304 | Power System Analysis | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 25 | 20 | 40 | - |
| 3. | EL306 | Microprocessor& Microcontroller Applications | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 25 | 20 | 40 | - |
| 4. | EL3xx | Departmental Elective Course- 3 | DEC/ GEC | 4 | 3 | 0/1 | 2/0 | 3 | 0 | 15/ 25 | 25/0 | 20/ 25 | 40/ 50 | |
| 5. | EL3xx | Departmental Elective Course- 4 | DEC/ GEC | 4 | 3 | 0/1 | 2/0 | 3 | 0 | 15/ 25 | 25/0 | 20/ 25 | 40/ 50 | |
| 6. | HU302 | Technical Communication | HMC | 2 | 3 | 0 | 0 | 3 | 0 | 25 | | 25 | 50 | |
| | | **Total** | | **22** | | | | | | | | | | |

## IV Year: Seventh Semester

| S. No. | Code | Title | Area | Cr | L | T | P | TH | PH | CWS | PRS | MTE | ETE | PRE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. | EL401 | B.Tech Project-I | DCC | 4 | | | | | | | | | | |
| 2. | EL403 | Training Seminar | DCC | 2 | | | | | | | | | | |
| 3. | EL405 | Digital Signal Processing | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 25 | 20 | 40 | - |
| 4. | EL407 | Instrumentation and Measurement | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 25 | 20 | 40 | - |
| 5. | EL409 | Communication Systems - II | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 25 | 20 | 40 | - |
| 6. | EL4xx | Departmental Elective Course- 5 | DEC/ GEC | 4 | 3 | 0/1 | 2/0 | 3 | 0 | 15/ 25 | 25/ 0 | 20 /25 | 40/ 50 | |
| | | **Total** | | **22** | | | | | | | | | | |

## IV Year: Eighth Semester

| S. No. | Code | Title | Area | Cr | L | T | P | TH | PH | CWS | PRS | MTE | ETE | PRE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. | EL402 | B.Tech Project-II | DCC | 8 | | | | | | | | | | |
| 2. | EL4xx | Departmental Elective Course- 6 | DEC/ GEC | 4 | 3 | 0/1 | 2/0 | 3 | 0 | 15/ 25 | 25/ 0 | 20 /25 | 40/ 50 | |
| 3. | EL4xx | Departmental Elective Course- 7 | DEC/ GEC | 4 | 3 | 0/1 | 2/0 | 3 | 0 | 15/ 25 | 25/ 0 | 20 /25 | 40/ 50 | |
| 4. | EL4xx | Departmental Elective Course- 8 | DEC/ GEC | 4 | 3 | 0/1 | 2/0 | 3 | 0 | 15/ 25 | 25/ 0 | 20 /25 | 40/ 50 | |
| | | **Total** | | **20** | | | | | | | | | | |

## List of Departmental Elective Courses

| S. No. | Elective Code | Title of Elective | Elective no. |
|---|---|---|---|
| 1. | EL-305 | Signals and Systems | DEC 1 and DEC 2 |
| 2. | EL-307 | **Power Station Practices** | |
| 3. | EL-309 | Special Electrical Machines | |
| 4. | EL-311 | Algorithms Design and Analysis | |
| 5. | EL-313 | IC Technology | |
| 6. | EL-315 | Digital Control & State Variable Analysis | |
| 7. | EL-317 | Renewable Energy Systems | |
| 8. | EL-319 | Digital System Design | |
| 9. | EL-321 | Soft Computing Techniques | |
| 10. | EL-323 | **CMOS Analog Integrated Circuits** | |
| 11. | EL-308 | Power System Operation and Control | DEC 3 and DEC 4 |
| 12. | EL-310 | Distributed Generation | |
| 13. | EL-312 | Electric Drives | |
| 14. | EL-314 | Power Electronic Applications to Power Systems | |
| 15. | EL-316 | Electrical Energy Storage Systems | |
| 16. | EL-318 | Switched Mode Power Supplies | |
| 17. | EL-320 | VLSI Design | |
| 18. | EL-322 | Database Management Systems | |
| 19. | EL-324 | Design, Estimation & Costing of Industrial Electrical Systems | |
| 20. | EL-326 | Process Instrumentation & Control | |
| 21. | EL-411 | Power System Modeling & Simulation | DEC-5 |
| 22. | EL-413 | Power System Reliability | |
| 23. | EL-415 | Design of Electrical Machines | |
| 24. | EL-417 | Antenna and Wave Propagation | |
| 25. | EL-419 | Pulse Width Modulation for Power converters | |
| 26. | EL-421 | Switchgear and Protection | |
| 27. | EL-423 | Microcontroller & Embedded Systems | |
| 28. | EL-425 | Advanced Analog Circuit Design | |
| 29. | EL-427 | Computer Architecture | |
| 30. | EL-429 | Active and Passive Network Synthesis | |

| S. No. | Elective Code | Title of Elective | Elective no. |
|---|---|---|---|
| 31. | EL-404 | Power System Dynamics & Stability | DEC 6, DEC 7 and DEC 8 |
| 32. | EL-406 | Distribution Systems Analysis & Control | |
| 33. | EL-408 | Restructured Power Systems | |
| 34. | EL-410 | Bio-medical Instrumentation | |
| 35. | EL-412 | High Voltage Engineering | |
| 36. | EL-414 | Operating System Design | |
| 37. | EL-416 | Grid Integration of Renewable Energy Sources | |
| 38. | EL-418 | Selected Topics in Power Electronics | |
| 39. | EL-420 | Power Quality | |
| 40. | EL-422 | HVDC Transmission | |
| 41. | EL-424 | Flexible AC Transmission Systems | |
| 42. | EL-426 | Smart Grid | |
| 43. | EL-428 | Digital Image Processing | |
| 44. | EL-430 | Filter Design | |
| 45. | EL-432 | AI and Expert Systems | |
| 46. | EL-434 | Computer Control of Processes | |
| 47. | EL-436 | Non-linear and Adaptive Control | |
| 48. | EL-438 | DSP Applications to Electromechanical Systems | |
| 49. | EL-440 | SCADA & Energy Management Systems | |
| 50. | EL-442 | Robotics and Machine Vision | |
| 51. | EL-444 | Utilization of Electrical Energy & Traction | |
| 52. | EL-446 | Data Communication and Computer Networks | |
| 53. | EL-448 | Microwave Engineering | |

# DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING

The Department of Electronics and Communication Engineering has seen considerable growth since its inception in 1976. The vision of the department is to focus on the incubation of innovations in the areas of electronic design/ fabrication, and communication technologies, which are needed to address the growing challenges of tomorrow. The overall aim is to harbour a sustainable, and continuously evolving scientific, technological and educational environment which is both internationally-adapted and industry-relevant. This department offers UG/ PG and Ph. D. programs. Currently, the department has an annual intake of 190 students in the B.Tech. program in Electronics and Communication Engineering. The department is also offering B.Tech (Evening) with an intake of 45 students. Project and Industrial Training is an integral part of the curriculum and are carried out in frontal areas of technology. Currently the Department has 11 well equipped curriculum laboratories and 4 research laboratories. There are separate departmental project laboratories. New equipment and experimentation work leading to perfect understanding of curriculum in electronics and communication engineering lays greater emphasis on deep understanding of fundamental principles and state of art knowledge. The PG programs include M. Tech. in VLSI Design and Embedded Systems; Signal Processing and Digital Design; and Microwave and Optical Communication and. The Department has focused attention on quality research. Scholarships are available for Ph. D. programs in the area of Electronics and Communication namely VLSI, DSP, Image Processing, Micro strip antenna design, Sensor Networks, Analog and digital system design .

Faculty members of the department have been regularly contributing towards International and National Journals of repute from publishers like IEEE Transactions, IET, Wiley, Springer and Elsevier, etc. along with Proceedings of National and International Conferences. The department is also actively involved in professional activities undertaken by IEEE Delhi chapters. Several popular technical books and chapters have been authored by the faculty members of the department. Some

faculty members have applied for patent for their research findings. The Department of Electronics and Communication Engineering at Delhi Technological University has developed into one of the best departments of the University. The placement trend has shown that the students of the department have been successful in getting lucrative jobs based on their interests in different fields. Top global recruiters such as Texas Instruments, Synopsis, Sandisk, Qualcomm, ARM, Freescale, ST Microelectronics, TCS Digital India, Samsung, Wipro, Mentor Graphics, Airtel, BEL, CDOT, TRAI, TCIL and Wynk have offered placements to the students of this department with a package of over Rs. 16 Lakh per annum. Other recruiters from allied sectors have recruited students from this department with attractive packages. This consistent placement record illustrates the commitment and contribution of this department to the success story of the University. The graduates of the department are occupying important positions in both government as well as corporate sector with many of them having joined programs of higher studies in India and abroad.

The Department regularly organizes seminars, workshops and training programs to keep pace with the new developments and recent trends in relevant technologies. Recently the department has organized invited lecture series in VLSI and Microwave engineering to augment industrial inputs. The department has hosted the MHRD sponsored GIAN course in the University which was delivered by Prof. Mohammad Sawan, Fellow of the Canadian Academy of Engineering, Fellow of the Engineering Institutes of Canada, Fellow of the IEEE Fellow IEEE and Professor of Microelectronics and Biomedical Engineering, Polytechnique Montréal, Canada. Apart from these activities the students are encouraged to organize and participate in various technical and social activities under the aegis of IEEE student branch and Robotics society. Technical fests are organized under the IEEE student branch (TROIKA) and Robotics society respectively. They are also encouraged to participate in various group learning and discussion activities in addition to presentation of seminar and term paper presentations on individualbasis.

# BACHELOR OF TECHNOLOGY
# (ELECTRONICS & COMMUNICATIONENGINEERING)

## I Year: First Semester

| Teaching Scheme | | | | | Contact Hours/ Week | | | Exam Duration (h) | | Relative Weights (%) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| S. No. | Subject Code | Course Title | Subject Area | Credit | L | T | P | Theory | Practical | CWS | PRS | MTE | ETE | PRE |
| **Group A** | | | | | | | | | | | | | | |
| 1 | MA101 | Mathematics - I | ASC | 4 | 3 | 1 | 0 | 3 | 0 | 25 | - | 25 | 50 | - |
| 2 | AP101 | Physics – I | ASC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 3 | AC101 | Chemistry | ASC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 4 | ME101 | Basic Mechanical Engineering | AEC | 4 | 4 | 0 | 0 | 3 | 0 | 25 | - | 25 | 50 | - |
| 5 | ME103 | Workshop Practice | AEC | 2 | 0 | 0 | 3 | 0 | 3 | - | 50 | - | - | 50 |
| 6 | HU101 | Communication Skills | HMC | 3 | 3 | 0 | 0 | 3 | 0 | 25 | - | 25 | 50 | - |
| | **Total** | | | **21** | 16 | 1 | 7 | | | | | | | |
| **Group B** | | | | | | | | | | | | | | |
| 1 | MA101 | Mathematics - I | ASC | 4 | 3 | 1 | 0 | 3 | 0 | 25 | - | 25 | 50 | |
| 2 | AP101 | Physics – I | ASC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | |
| 3 | EE101 | Basic Electrical Engineering | AEC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | |
| 4 | CO101 | Programming Fundamentals | AEC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | |
| 5 | ME105 | Engineering Graphics | AEC | 2 | 0 | 0 | 3 | 0 | 3 | - | 50 | - | - | |
| 6 | EN101 | Introduction to Environmental Science | AEC | 3 | 3 | 0 | 0 | 3 | 0 | 25 | - | 25 | 50 | |
| | **Total** | | | **21** | 15 | 1 | 9 | | | | | | | |

## I Year: Second Semester

| Teaching Scheme | | | | | Contact Hours/ Week | | | Exam Duration (h) | | Relative Weights (%) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| S. No. | Subject Code | Course Title | Subject Area | Credit | L | T | P | Theory | Practical | CWS | PRS | MTE | ETE | PRE |
| **Group A** | | | | | | | | | | | | | | |
| 1 | MA102 | Mathematics – II | ASC | 4 | 3 | 1 | 0 | 3 | 0 | 25 | - | 25 | 50 | - |
| 2 | AP102 | Physics – II | ASC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 3 | EE102 | Basic Electrical Engineering | AEC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 4 | CO102 | Programming Fundamentals | AEC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 5 | ME102 | Engineering Graphics | AEC | 2 | 0 | 0 | 3 | 0 | 3 | - | 50 | - | - | 50 |
| 6 | EN102 | Introduction to Environmental Science | AEC | 3 | 3 | 0 | 0 | 3 | 0 | 25 | - | 25 | 50 | - |
| | **Total** | | | **21** | 15 | 1 | 9 | | | | | | | |
| **Group B** | | | | | | | | | | | | | | |
| 1 | MA102 | Mathematics – II | ASC | 4 | 3 | 1 | 0 | 3 | 0 | 25 | - | 25 | 50 | - |
| 2 | AP102 | Physics – II | ASC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 3 | AC102 | Chemistry | ASC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 4 | ME104 | Basic Mechanical Engineering | AEC | 4 | 4 | 0 | 0 | 3 | 0 | 25 | - | 25 | 50 | - |
| 5 | ME106 | Workshop Practice | AEC | 2 | 0 | 0 | 3 | 0 | 3 | - | 50 | - | - | 50 |
| 6 | HU102 | Communication Skills | HMC | 3 | 3 | 0 | 0 | 3 | 0 | 25 | - | 25 | 50 | - |
| | **Total** | | | **21** | 16 | 1 | 7 | | | | | | | |

## II Year: Third Semester

| S. No. | Code | Title | Area | Cr | L | T | P | TH | PH | CWS | PRS | MTE | ETE | PRE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. | EE251 | Electronic Instrumentation and Measurements | AEC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 25 | 20 | 40 | - |
| 2. | EC201 | Analog Electronics – I | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 25 | 20 | 40 | - |
| 3. | EC203 | Digital Design – I | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 25 | 20 | 40 | - |
| 4. | EC205 | Signals & Systems | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 25 | 20 | 40 | |
| 5. | EC207 | Engineering Analysis & Design (Network Analysis and Synthesis) | DCC | 4 | 3 | 1 | 0 | 3 | 0 | 15 | 25 | 20 | 40 | - |
| 6. | HU201 | Engineering Economics | HMC | 3 | 3 | 0 | 0 | 3 | 0 | 25 | - | 25 | 50 | |
| | | **Total** | | **23** | | | | | | | | | | |

## II Year: Fourth Semester

| S. No. | Code | Title | Area | Cr | L | T | P | TH | PH | CWS | PRS | MTE | ETE | PRE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. | EE262 | Electromagnetics | AEC | 4 | 3 | 1 | 0 | 3 | 0 | 25 | - | 25 | 50 | - |
| 2. | EC 202 | Analog Electronics–II | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 25 | 20 | 40 | - |
| 3. | EC204 | Digital Design – II | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 25 | 20 | 40 | - |
| 4. | EC206 | Communication Systems | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 25 | 20 | 40 | - |
| 5. | EC208 | Computer Architecture | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 25 | 20 | 40 | |
| 6. | MG201 | **Fundamentals of Management** | HMC | 3 | 3 | 0 | 0 | 3 | 0 | 25 | - | 25 | 50 | |
| | | **Total** | | **23** | | | | | | | | | | |

## III Year: Fifth Semester

| S. No. | Code | Title | Area | Cr | L | T | P | TH | PH | CWS | PRS | MTE | ETE | PRE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. | EC301 | Digital Communication | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 25 | 20 | 40 | |
| 2. | EC303 | Linear Integrated Circuits | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 25 | 20 | 40 | - |
| 3. | ECxxx | Departmental Elective Course -1 | DEC/ GEC | 4 | 3 | 0/1 | 2/0 | 3 | 0 | 15/ 25 | 25/- | 20/ 25 | 40/ 50 | |
| 4. | ECxxx | Departmental Elective Course- 2 | DEC/ GEC | 4 | 3 | 0/1 | 2/0 | 3 | 0 | 15/ 25 | 25/- | 20/ 25 | 40/ 50 | |
| 5. | UExxx | Open Elective Course | OEC | 3 | 3 | 0 | 0 | 3 | 0 | 25 | | 25 | 50 | - |
| 6. | HU303 | Professional Ethics & Human Values | HMC | 2 | 2 | 0 | 0 | 3 | 0 | 25 | - | 25 | 50 | |
| | | **Total** | | **21** | | | | | | | | | | |

## III Year: Sixth Semester

| S. No. | Code | Title | Area | Cr | L | T | P | TH | PH | CWS | PRS | MTE | ETE | PRE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. | EC302 | VLSI Design | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 25 | 20 | 40 | |
| 2. | EC304 | Digital Signal Processing | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 25 | 20 | 40 | - |
| 3. | EC306 | Embedded Systems | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 25 | 20 | 40 | - |
| 4. | ECxxx | Departmental Elective Course -3 | DEC/ GEC | 4 | 3 | 0/1 | 2/0 | 3 | 0 | 15/ 25 | 25/- | 20/ 25 | 40/ 50 | |
| 5. | ECxxx | Departmental Elective Course- 4 | DEC/ GEC | 4 | 3 | 0/1 | 2/0 | 3 | 0 | 15/ 25 | 25/- | 20/ 25 | 40/ 50 | |
| 6. | HU302 | Technical Communication | HMC | 2 | 2 | 0 | 0 | 3 | 0 | 25 | - | 25 | 50 | |
| | | **Total** | | **22** | | | | | | | | | | |

## IV Year: Seventh Semester

| S. No. | Code | Title | Area | Cr | L | T | P | TH | PH | CWS | PRS | MTE | ETE | PRE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. | EC401 | B. Tech Project-I | DCC | 4 | | | | | | | | | | |
| 2. | EC403 | Training Seminar | DCC | 2 | | | | | | | | | | |
| 3. | EC405 | Microwave Engineering | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 25 | 20 | 40 | - |
| 4. | EC407 | Optical Communication | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 25 | 20 | 40 | - |
| 5. | EC4xx | Departmental Elective Course- 5 | DEC/ GEC | 4 | 3 | 0/1 | 2/0 | 3 | 0 | 15/ 25 | 25/- | 20/ 25 | 40/ 50 | |
| 6. | EC 4xx | Departmental Elective Course- 6 | DEC/ GEC | 4 | 3 | 0/1 | 2/0 | 3 | 0 | 15/ 25 | 25/- | 20/ 25 | 40/ 50 | |
| | | **Total** | | **22** | | | | | | | | | | |

## IV Year: Eighth Semester

| S. No. | Code | Title | Area | Cr | L | T | P | TH | PH | CWS | PRS | MTE | ETE | PRE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. | EC402 | B. Tech Project-II (Contd. From VII Sem.) | DCC | 8 | | | | | | | | | | |
| 2. | EC404 | Wireless Communication | DCC | 4 | 3 | 0 | 2 | 4 | - | 15 | 25 | 20 | 40 | - |
| 3. | EC406 | Departmental Elective Course- 7 | DEC/ GEC | 4 | 3 | 0/1 | 2/0 | 3 | 0 | 15/ 25 | 25/- | 20/ 25 | 40/ 50 | - |
| 4. | EC4xx | Departmental Elective Course- 8 | DEC/ GEC | 4 | 3 | 0/1 | 2/0 | 3 | 0 | 15/ 25 | 25/- | 20/ 25 | 40/ 50 | |
| | | **Total** | | **20** | | | | | | | | | | |

## List of Departmental Elective Courses

| S.No. | Subject Code | Subjects | Elective No. |
|---|---|---|---|
| 1. | EC- 305 | Semiconductor Device Electronics | DEC -1,DEC-2 |
| 2. | EC – 307 | Antenna Design | |
| 3. | EC - 309 | Bio – Medical Electronics & Instrumentation | |
| 4. | EC - 311 | Algorithms Design And Analysis | |
| 5. | EC – 313 | Microprocessors And Interfacing | |
| 6. | EC – 315 | Computer Communication Networks | |
| 7. | EC - 317 | Operating Systems | |
| 8. | EC – 319 | CMOS Analog Integrated Circuits | |
| 9. | EC – 321 | IC Technology | |
| 10. | EC - 323 | Control Systems | |
| 11. | EC - 308 | Analog Filter Design | DEC-3,DEC-4 |
| 12. | EC – 310 | Testing And Diagnosis Of Digital System Design | |
| 13. | EC – 312 | Software Defined Radio And Cognitive Radio | |
| 14. | EC - 314 | RF Design | |
| 15. | EC – 316 | Wireless Sensor Networks | |
| 16. | EC – 318 | RF Circuits in CMOS Technology | |
| 17. | EC – 320 | Soft Computing | |
| 18. | EC – 322 | Green Sensors | |
| 19. | EC - 324 | Nano Electronics | |
| 20. | EC – 326 | Data Converters | |
| 21. | EC – 328 | Speech Recognition | |
| 22. | EC – 330 | Digital Image Processing | |
| 23. | EC - 332 | Information Theory and Coding | |

| S.No. | Subject Code | Subjects | Elective No. |
|---|---|---|---|
| 24. | EC - 409 | Computer Vision | DEC-5, DEC-6 |
| 25. | EC –411 | Bio – Medical Signal And Image Processing | |
| 26. | EC – 413 | Power Electronics | |
| 27. | EC – 415 | System On Chip Design | |
| 28. | EC – 417 | CAD For VLSI Design | |
| 29. | EC – 419 | Memory Design | |
| 30. | EC – 421 | Computer And Numerical Techniques In Electromagnetics | |
| 31. | EC – 423 | Internet and Web Technologies | |
| 32. | EC – 425 | Mixed Signal Design | |
| 33. | EC – 427 | Information Theory and Coding | |
| 34. | EC – 408 | Low Power VLSI Design | DCE-7,DEC-8 |
| 35. | EC – 410 | Advanced Coding Theory | |
| 36. | EC- 412 | Machine Learning | |
| 37. | EC- 414 | EMC / EMI | |
| 38. | EC- 416 | Pattern Recognition | |
| 39. | EC- 418 | Estimation And Detection Theory | |
| 40. | EC – 420 | Cloud Computing | |
| 41. | EC – 422 | Robotics & Machine Vision | |
| 42. | EC – 424 | Fault Tolerant Computing | |
| 43. | EC – 426 | Distributed Computing | |
| 44. | EC – 428 | Neuroelectronics | |
| 45. | EC – 430 | Advanced Computer Architecture | |
| 46. | EC – 432 | Bio – Impedance Based Measurements | |
| 47. | EC – 434 | Fundamentals of MIMO | |
| 48. | EC – 436 | Advance Microwave & Antenna Design | |
| 49. | EC- 438 | Radar and Satellite Communication | |

# DEPARTMENT OF ENVIRONMENTAL ENGINEERING

The Department of Environment Engineering has witnessed significant growth since the inception of Environmental Engineering at undergraduate (BE/ B. Tech since 1998) levels. Since then, the department strived ahead to develop a capable and well trained task force of environmental engineers. Realising the need for a strong academic and research base in the subject, the University established an independent Department of Environmental Engineering in 2012.

The Department admits student for B. Tech. programs in Environmental Engineering. The present intake is 60 in undergraduate (B.Tech.) and 20 M.Tech. (full time) course. The academic curriculum of the department is based on an amalgam of mandatory, electives, independent projects, and industrial internship. The department has a strong research infrastructure with six well equipped, state-of-art laboratories with all modern instrumentation and experimental setup. Currently, the department is actively engaged in research projects in the area of water treatment air pollution control, Bioremediation, Noise pollution control, and contaminant transport & modelling.

The department has nurtured a compatible research atmosphere and has attracted the research projects from Department of Science & Technology (DST), UGC, AICTE etc. The department is actively engaged in offering environmental consultancy service to various industries, NGOs, Govt. departments like PWD, CPWD, NDMC, MCD, DDA, and Irrigation and Flood Control Department.

In order to strengthen the academic environmental and institutional ties, the Department has collaboration with Central Pollution Control Board, National Physical Lab, Delhi Pollution Control Committee, DRDO, and La Trobe University Australia for student and faculty exchange, collaborative research projects, and training/internships. The department has held various seminars and conferences with UNESCO, University of California, AITS, Ministry of Environment & Forest, and NGOs for training and capacity building of employees and community service. The Department has impressive industry interaction and placement records with a numbers of students places in NALCO, CPCB, Maruti, TERI, Michelin, Yamaha, GAIL, NTPC, and in various foreign Universities.

# BACHELOR OF TECHNOLOGY
# (ENVIRONMENTAL ENGINEERING)

## I Year: First Semester

| Teaching Scheme | | | | | Contact Hours/ Week | | | Exam Duration (h) | | Relative Weights (%) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| S. No. | Subject Code | Course Title | Subject Area | Credit | L | T | P | Theory | Practical | CWS | PRS | MTE | ETE | PRE |
| **Group A** | | | | | | | | | | | | | | |
| 1 | MA101 | Mathematics - I | ASC | 4 | 3 | 1 | 0 | 3 | 0 | 25 | - | 25 | 50 | - |
| 2 | AP101 | Physics – I | ASC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 3 | AC101 | Chemistry | ASC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 4 | ME101 | Basic Mechanical Engineering | AEC | 4 | 4 | 0 | 0 | 3 | 0 | 25 | - | 25 | 50 | - |
| 5 | ME103 | Workshop Practice | AEC | 2 | 0 | 0 | 3 | 0 | 3 | - | 50 | - | - | 50 |
| 6 | HU101 | Communication Skills | HMC | 3 | 3 | 0 | 0 | 3 | 0 | 25 | - | 25 | 50 | - |
| | **Total** | | | **21** | 16 | 1 | 7 | | | | | | | |
| **Group B** | | | | | | | | | | | | | | |
| 1 | MA101 | Mathematics - I | ASC | 4 | 3 | 1 | 0 | 3 | 0 | 25 | - | 25 | 50 | - |
| 2 | AP101 | Physics – I | ASC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 3 | EE101 | Basic Electrical Engineering | AEC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 4 | CO101 | Programming Fundamentals | AEC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 5 | ME105 | Engineering Graphics | AEC | 2 | 0 | 0 | 3 | 0 | 3 | - | 50 | - | - | 50 |
| 6 | EN101 | Introduction to Environmental Science | AEC | 3 | 3 | 0 | 0 | 3 | 0 | 25 | - | 25 | 50 | - |
| | **Total** | | | **21** | 15 | 1 | 9 | | | | | | | |

## I Year: Second Semester

| Teaching Scheme | | | | | Contact Hours/ Week | | | Exam Duration (h) | | Relative Weights (%) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| S. No. | Subject Code | Course Title | Subject Area | Credit | L | T | P | Theory | Practical | CWS | PRS | MTE | ETE | PRE |
| **Group A** | | | | | | | | | | | | | | |
| 1 | MA102 | Mathematics -II | ASC | 4 | 3 | 1 | 0 | 3 | 0 | 25 | - | 25 | 50 | - |
| 2 | AP102 | Physics – II | ASC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 3 | EE102 | Basic Electrical Engineering | AEC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 4 | CO102 | Programming Fundamentals | AEC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 5 | ME102 | Engineering Graphics | AEC | 2 | 0 | 0 | 3 | 0 | 3 | - | 50 | - | - | 50 |
| 6 | EN102 | Introduction to Environmental Science | AEC | 3 | 3 | 0 | 0 | 3 | 0 | 25 | - | 25 | 50 | - |
| | **Total** | | | **21** | 15 | 1 | 9 | | | | | | | |
| **Group B** | | | | | | | | | | | | | | |
| 1 | MA102 | Mathematics-II | ASC | 4 | 3 | 1 | 0 | 3 | 0 | 25 | - | 25 | 50 | - |
| 2 | AP102 | Physics – II | ASC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 3 | AC102 | Chemistry | ASC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 4 | ME104 | Basic Mechanical Engineering | AEC | 4 | 4 | 0 | 0 | 3 | 0 | 25 | - | 25 | 50 | - |
| 5 | ME106 | Workshop Practice | AEC | 2 | 0 | 0 | 3 | 0 | 3 | - | 50 | - | - | 50 |
| 6 | HU102 | Communication Skills | HMC | 3 | 3 | 0 | 0 | 3 | 0 | 25 | - | 25 | 50 | - |
| | **Total** | | | **21** | 16 | 1 | 7 | | | | | | | |

## II Year: Third Semester

| S. No. | Code | Title | Area | Cr | L | T | P | TH | PH | CWS | PRS | MTE | ETE | PRE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. | CE251 | Building Material & Construction | AEC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 25 | 20 | 40 | - |
| 2. | EN201 | Strength of Materials | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 25 | 20 | 40 | - |
| 3. | EN203 | Engineering & Environmental Surveying | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 25 | 20 | 40 | - |
| 4. | EN205 | Environmental Chemistry & Microbiology | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 25 | 20 | 40 | |
| 5. | EN207 | Engineering Analysis & Design | DCC | 4 | 3 | 1 | 0 | 3 | 0 | 25 | - | 25 | 50 | - |
| 6. | HU201 | Engineering Economics | HMC | 3 | 3 | 0 | 0 | 3 | 0 | 25 | - | 25 | 50 | |
| | | **Total** | | **23** | | | | | | | | | | |

## II Year: Fourth Semester

| S. No. | Code | Title | Area | Cr | L | T | P | TH | PH | CWS | PRS | MTE | ETE | PRE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. | CE252 | Structural Analysis | AEC | 4 | 3 | 1 | 0 | 3 | 0 | 25 | - | 25 | 50 | - |
| 2. | EN 202 | Geotechnical Engineering | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 25 | 20 | 40 | - |
| 3. | EN204 | Water Engineering: Design & Application | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 25 | 20 | 40 | - |
| 4. | EN206 | Engineering Geology, GIS & Remote Sensing | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 25 | 20 | 40 | - |
| 5. | EN208 | Fluid Mechanics & Hydraulic Machines | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 25 | 20 | 40 | |
| 6. | MG202 | Fundamentals of Management | HMC | 3 | 3 | 0 | 0 | 3 | 0 | 25 | - | 25 | 50 | |
| | | **Total** | | **23** | | | | | | | | | | |

## III Year: Fifth Semester

| S. No. | Code | Title | Area | Cr | L | T | P | TH | PH | CWS | PRS | MTE | ETE | PRE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. | EN301 | Waste Water Engineering: Design and Applications | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 25 | 20 | 40 | |
| 2. | EN303 | Instrumentation Techniques for Environmental Monitoring | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 25 | 20 | 40 | - |
| 3. | ENxxx | Departmental Elective Course- 1 | DEC/ GEC | 4 | 3 | 0/1 | 2/0 | 3 | 0 | 15/ 25 | 15/0 | 30/ 25 | 40/ 50 | |
| 4. | ENxxx | Departmental Elective Course- 2 | DEC/ GEC | 4 | 3 | 0/1 | 2/0 | 3 | 0 | 15/ 25 | 15/0 | 30/ 25 | 40/ 50 | |
| 5. | UExxx | Open Elective Course | OEC | 3 | 3 | 0 | 0 | 3 | 0 | 25 | | 25 | 50 | - |
| 6. | HU303 | Professional Ethics & Human Values | HMC | 2 | 2 | 0 | 0 | 3 | 0 | 25 | - | 25 | 50 | |
| | | **Total** | | **21** | | | | | | | | | | |

## III Year: Sixth Semester

| S. No. | Code | Title | Area | Cr | L | T | P | TH | PH | CWS | PRS | MTE | ETE | PRE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. | EN302 | Solid Waste Management | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 25 | 20 | 40 | |
| 2. | EN304 | Air Pollution & Control | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 25 | 20 | 40 | - |
| 3. | EN306 | Hydrology & Ground Water Engineering. | DCC | 4 | 3 | 1 | 0 | 3 | 0 | 25 | - | 25 | 50 | - |
| 4. | ENxxx | Departmental Elective Course -3 | DEC/ GEC | 4 | 3 | 0/1 | 2/0 | 3 | 0 | 15/ 25 | 15/0 | 30 / 25 | 40/ 50 | |
| 5. | ENxxx | Departmental Elective Course- 4 | DEC/ GEC | 4 | 3 | 0/1 | 2/0 | 3 | 0 | 15/ 25 | 15/0 | 30 / 25 | 40/ 50 | |
| 6. | HU302 | Technical Communication | HMC | 2 | 2 | 0 | 0 | 3 | 0 | 25 | - | 25 | 50 | |
| | | **Total** | | **22** | | | | | | | | | | |

## IV Year: Seventh Semester

| S. No. | Code | Title | Area | Cr | L | T | P | TH | PH | CWS | PRS | MTE | ETE | PRE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. | EN401 | B. Tech Project-I | DCC | 4 | | | | | | | | | | |
| 2. | EN403 | Training Seminar | DCC | 2 | | | | | | | | | | |
| 3. | EN405 | Project Management | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 25 | 20 | 40 | |
| 4. | EN407 | Vibration Analysis & Control of Noise Pollution | DCC | 4 | 3 | 1 | 0 | 3 | 0 | 25 | - | 25 | 50 | |
| 5. | EN409 | Industrial Waste Management | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 25 | 20 | 40 | |
| 6. | EN4xx | Departmental Elective Course- 5 | DEC/ GEC | 4 | 3 | 0/1 | 2/0 | 3 | 0 | 15/ 25 | 15/ 0 | 30 /25 | 40/ 50 | |
| | | **Total** | | **22** | | | | | | | | | | |

## IV Year: Eighth Semester

| S. No. | Code | Title | Area | Cr | L | T | P | TH | PH | CWS | PRS | MTE | ETE | PRE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. | EN402 | B. Tech Project -II | DCC | 8 | | | | | | | | | | |
| 2. | EN404 | Environmental Impact Assessment & Audit | DCC | 4 | 3 | 1 | 0 | 4 | - | 25 | 0 | 25 | 50 | - |
| 3. | EN4xx | Departmental Elective Course - 6 | DEC/ GEC | 4 | 3 | 0/1 | 2/0 | 3 | 0 | 15/ 25 | 15/0 | 30/ 25 | 40/ 50 | |
| 4. | EN4xx | Departmental Elective Course- 7 | DEC/ GEC | 4 | 3 | 0/1 | 2/0 | 3 | 0 | 15/ 25 | 15/0 | 30/ 25 | 40/ 50 | |
| | | **Total** | | **20** | | | | | | | | | | |

## List of Departmental Elective Courses

| S.No. | Subject Code | Subjects | Elective No. |
|---|---|---|---|
| 1. | EN-305 | Soil Pollution & Remediation | DEC -1 ,2 |
| 2. | EN-307 | Planning and Design of Environmental Enng. Works | |
| 3. | EN-309 | Water Resources System | |
| 4. | EN-311 | Climate Change & CDM | |
| 5. | EN-313 | Environmental Toxicology & Risk Assessment | |
| 6. | EN-315 | Ecology and Bio-monitoring Techniques | |
| 7. | EN-308 | Hazardous & Biomedical Waste Management | DEC-3,4 |
| 8. | EN–310 | Surface & Ground Water Pollution | |
| 9. | EN-312 | Advance Surveying | |
| 10. | EN–314 | Green Technology | |
| 11. | EN–316 | Environmental Law and Policy | |
| 12. | EN–318 | Transportation and Traffic Engineering | |
| 13. | EN-411 | Occupational Hazards, Health & Safety | DEC-5 |
| 14. | EN-413 | Water and Soil Conservation | |
| 15. | EN–415 | System Simulation & Modeling | |
| 16. | EN-406 | Advanced Open Channel Hydraulics | DEC-6,7 |
| 17. | EN-408 | Risk and Reliability Analysis of Environmental System | |
| 18. | EN-410 | Irrigation and Drainage Engineering | |
| 19. | EN-412 | Environment and Sustainable Development | |
| 20. | EN-414 | Disaster Management | |
| 21. | EN-416 | Non-Conventional Energy Systems | |

# DEPARTMENT OF HUMANITIES

The Department of Humanities offers courses in communication Skill, English, Economics and Accountancy for engineering and management students in an effort to train them for the global economic environment of the 21st Century Besides giving them in-depth understanding of the labour market in which they are expected to work as well as emerging employment trends among engineers, students are sensitized towards the specific technological needs of urban slums and rural areas and socio-economic impact of engineering projects on the masses. A conscious effort is also made to develop very good communication, interpersonal and business skill among the budding engineers. To achieve this, class room teaching is supplemented by market survey and analysis, paper presentation, group discussion etc.

Faculty Members frequently participate and present their research papers in the national and international seminars / conferences. The Department organizes seminars and invited talks for the benefit of students.

Communication Skills helps them in undertaking the nuances of English language. It enables them in gathering those much-needed presentation skills and communication techniques which provides a competitive edge. Not only does it help them in developing proficiency in English, it also makes them aware of the changing global trends and demands in the world of English language.

Economics at B.Tech., MBA and Ph.D. level, is another attempt to sensitize the students to address the growing responsibility of engineering hubs towards urgent business needs. At one hand, the syllabus introduces them to the labor market and emerging employment trends, efforts are made to co-relate their theoretical learning with the immediate environment. The classroom teaching encompasses a range of conceptual training which is supplemented by market analysis, paper presentations, and group discussions, further enhanced by a well equipped laboratory.

The department is in the process of setting up Language Laboratory which will expose the students to TOEFL and GRE model of training and practice. By learning correct pronunciation, accent and intonation, students will improve their communication skills and learn different variations in English expressions. It is also proposed to start an M.SC in Economics and Linguistic courses in German, French, Japanese, Chinese and Russian.

# DEPARTMENT OF INFORMATION TECHNOLOGY

The Information Technology (IT) has been globally recognized as an important tool of "growth and development" in the 21st century. In the Information Age, a combination of dramatic sociological, political, economical and technological factors are at play to bring about fundamental and irreversible changes in the entire social system. The scope of these transformations is global. In the times to come, IT acts as the principal engine of rapid growth of nation's power.

The Delhi Technological University, offers an undergraduate course in Information Technology with an intake of 120 students every year. Also, to meet the growing demands of present day technologies a post graduate course in Information Systems is being offered. The courses are designed in a way so as to provide the students with fundamental concepts and tools related to the field. The Bachelor of Technology (IT) emphasizes on all basic subjects such as operating systems, computer architecture, software development, networking, multimedia and graphics, Internet Security and computer communications. Specialized knowledge on analysis and design of information system, mobile communication, soft computing, artificial intelligence, digital signal processing, computer vision and expert systems, web engineering is also imparted, along with various electives related to upcoming IT fields. Further, large number of publications in the International Journals of repute and conference proceedings by the undergraduate and post-graduate students is outcome of the research culture developed in the department.

The department has recently come up with the "Society for IT Engineers" (S.I.T.E) in the year 2010-2011, which aims at encouraging students to be part of active working teams in practical industrial projects and technical work, enabling them to expand intellectually so that they can make in this challenging industry and helping inculcate temperament of IT among students as professionals.

Ministry of Communications and Information Technology, Govt. of India has identified Information Security as one of the thrust areas and has entrusted the department of Information Technology, Delhi Technological University to set up an inter-ministerial working group on Information Security Education and Awareness Program. The aim is

to recommend an action plan and strategy for Human Resource Development in the area of Cyber Security/Information Security, thus leading to indigenous hardware and software capabilities in the core of Information Security.

Keeping in mind our constant urge to grow and keep abreast with modern technology and ever growing concerns of the society, Department has recently conducted workshop on “Intellectual Property Rights (IPR) meets Information Technology” where the academia students and faculty alike, industry, national organizations such as FICCI and practicing IP attorneys were brought under one roof to initiate a very pertinent dialog-pertinent to all stakeholders and nation at large. The Department also has a project by the name of “Unmanned Aircraft Systems in an autonomous aerial vehicle development”, which is carried out by the multidisciplinary students of DTU in collaboration with LOCKHEED MARTIN, a U.S. company. Further, DRDO sponsored project titled “Classification and analysis of suspicious codes based on their static and dynamic features using multiple classifiers” has been started in this academic session.

The department provides well equipped and well-connected state of the art laboratories in the areas of Web engineering, computer Networking, Information Security, etc. apart from various already existing laboratories. Department of IT has starting a new laboratory named as “Biometric Lab”. Biometrics deals with physiological and behavioral data with physiological and behavioral data of human beings (or living species in broader sense), which is one of the most authentic data. It plays an important role in information security and makes thrust area for research. The field of this lab will be largely devoted to study and develop technologies for identification of individuals using biological traits, such as those based on retinal or iris scanning, fingerprints, face recognition, voice recognition etc.

Further plans for advancement and expansion of the research in the areas of information security, computer networks, optical communication, knowledge discovery in databases and other IT related fields shall be undertaken.

# BACHELOR OF TECHNOLOGY
# (INFORMATION TECHNOLOGY)

## I Year: First Semester

| Teaching Scheme | | | | | Contact Hours/ Week | | | Exam Duration (h) | | Relative Weights (%) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| S. No. | Subject Code | Course Title | Subject Area | Credit | L | T | P | Theory | Practical | CWS | PRS | MTE | ETE | PRE |
| **Group A** | | | | | | | | | | | | | | |
| 1 | MA101 | Mathematics - I | ASC | 4 | 3 | 1 | 0 | 3 | 0 | 25 | - | 25 | 50 | - |
| 2 | AP101 | Physics – I | ASC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 3 | AC101 | Chemistry | ASC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 4 | ME101 | Basic Mechanical Engineering | AEC | 4 | 4 | 0 | 0 | 3 | 0 | 25 | - | 25 | 50 | - |
| 5 | ME103 | Workshop Practice | AEC | 2 | 0 | 0 | 3 | 0 | 3 | - | 50 | - | - | 50 |
| 6 | HU101 | Communication Skills | HMC | 3 | 3 | 0 | 0 | 3 | 0 | 25 | - | 25 | 50 | - |
| | **Total** | | | **21** | 16 | 1 | 7 | | | | | | | |
| **Group B** | | | | | | | | | | | | | | |
| 1 | MA101 | Mathematics - I | ASC | 4 | 3 | 1 | 0 | 3 | 0 | 25 | - | 25 | 50 | - |
| 2 | AP101 | Physics – I | ASC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 3 | EE101 | Basic Electrical Engineering | AEC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 4 | CO101 | Programming Fundamentals | AEC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 5 | ME105 | Engineering Graphics | AEC | 2 | 0 | 0 | 3 | 0 | 3 | - | 50 | - | - | 50 |
| 6 | EN101 | Introduction to Environmental Science | AEC | 3 | 3 | 0 | 0 | 3 | 0 | 25 | - | 25 | 50 | - |
| | **Total** | | | **21** | 15 | 1 | 9 | | | | | | | |

## I Year: Second Semester

| Teaching Scheme | | | | | Contact Hours/ Week | | | Exam Duration (h) | | Relative Weights (%) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| S. No. | Subject Code | Course Title | Subject Area | Credit | L | T | P | Theory | Practical | CWS | PRS | MTE | ETE | PRE |
| **Group A** | | | | | | | | | | | | | | |
| 1 | MA102 | Mathematics - II | ASC | 4 | 3 | 1 | 0 | 3 | 0 | 25 | - | 25 | 50 | - |
| 2 | AP102 | Physics – II | ASC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 3 | EE102 | Basic Electrical Engineering | AEC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 4 | CO102 | Programming Fundamentals | AEC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 5 | ME102 | Engineering Graphics | AEC | 2 | 0 | 0 | 3 | 0 | 3 | - | 50 | - | - | 50 |
| 6 | EN102 | Introduction to Environmental Science | AEC | 3 | 3 | 0 | 0 | 3 | 0 | 25 | - | 25 | 50 | - |
| | **Total** | | | **21** | 15 | 1 | 9 | | | | | | | |
| **Group B** | | | | | | | | | | | | | | |
| 1 | MA102 | Mathematics -II | ASC | 4 | 3 | 1 | 0 | 3 | 0 | 25 | - | 25 | 50 | - |
| 2 | AP102 | Physics – II | ASC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 3 | AC102 | Chemistry | ASC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 4 | ME104 | Basic Mechanical Engineering | AEC | 4 | 4 | 0 | 0 | 3 | 0 | 25 | - | 25 | 50 | - |
| 5 | ME106 | Workshop Practice | AEC | 2 | 0 | 0 | 3 | 0 | 3 | - | 50 | - | - | 50 |
| 6 | HU102 | Communication Skills | HMC | 3 | 3 | 0 | 0 | 3 | 0 | 25 | - | 25 | 50 | - |
| | **Total** | | | **21** | 16 | 1 | 7 | | | | | | | |

## II Year: Third Semester

| S. No. | Code | Title | Area | Cr | L | T | P | TH | PH | CWS | PRS | MTE | ETE | PRE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. | EC261 | Analog Electronics | AEC | 4 | 3 | 0 | 2 | 3 | - | 15 | 15 | 30 | 40 | - |
| 2. | IT201 | Data Structures | DCC | 4 | 3 | 0 | 2 | 3 | - | 15 | 15 | 30 | 40 | - |
| 3. | IT203 | Object Oriented Programming | DCC | 4 | 3 | 0 | 2 | 3 | - | 15 | 15 | 30 | 40 | - |
| 4. | IT205 | Discrete Structures | DCC | 4 | 3 | 1 | 0 | 3 | - | 25 | - | 25 | 50 | - |
| 5. | IT207 | Engineering Analysis and Design (Modeling & Simulation) | DCC | 4 | 3 | 1 | 0 | 3 | - | 25 | - | 25 | 50 | - |
| 6. | HU201 | Engineering Economics | HMC | 3 | 3 | 0 | 0 | 3 | - | 25 | - | 25 | 50 | - |
| | | **Total** | | **23** | | | | | | | | | | |

## II Year: Fourth Semester

| S. No. | Code | Title | Area | Cr | L | T | P | TH | PH | CWS | PRS | MTE | ETE | PRE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. | EC262 | Digital Electronics | AEC | 4 | 3 | 0 | 2 | 3 | - | 15 | 15 | 30 | 40 | - |
| 2. | IT202 | Database Management Systems | DCC | 4 | 3 | 0 | 2 | 3 | - | 15 | 15 | 30 | 40 | - |
| 3. | IT204 | Operating System | DCC | 4 | 3 | 0 | 2 | 3 | - | 15 | 15 | 30 | 40 | - |
| 4. | IT206 | Computer Organization and Architecture | DCC | 4 | 3 | 1 | 0 | 3 | - | 25 | - | 25 | 50 | - |
| 5. | IT208 | Algorithm Design and Analysis | DCC | 4 | 3 | 1 | 0 | 3 | - | 25 | - | 25 | 50 | - |
| 6. | MG202 | Fundamentals of Management | HMC | 3 | 3 | 0 | 0 | 3 | - | 25 | - | 25 | 50 | - |
| | | **Total** | | **23** | | | | | | | | | | |

## III Year: Fifth Semester

| S. No. | Code | Title | Area | Cr | L | T | P | TH | PH | CWS | PRS | MTE | ETE | PRE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. | IT301 | Theory of Computation | DCC | 4 | 3 | 1 | 0 | 3 | - | 25 | - | 25 | 50 | - |
| 2. | IT303 | Computer Networks | DCC | 4 | 3 | 0 | 2 | 3 | - | 15 | 25 | 20 | 40 | - |
| 3. | IT3xx | Departmental Elective Course -1 | DEC/ GEC | 4 | 3 | 0/1 | 2/0 | 3 | - | 15/ 25 | 25/- | 20 /25 | 40/ 50 | - |
| 4. | IT3xx | Departmental Elective Course -2 | DEC/ GEC | 4 | 3 | 0/1 | 2/0 | 3 | - | 15/ 25 | 25/- | 20 /25 | 40/ 50 | - |
| 5. | UExxx | Open Elective Course | OEC | 3 | 3 | 0 | 0 | 3 | - | 25 | - | 25 | 50 | - |
| 6. | HU303 | Professional Ethics and Human values | HMC | 2 | 2 | 0 | 0 | 2 | - | 25 | - | 25 | 50 | - |
| | | **Total** | | **21** | | | | | | | | | | |

## III Year: Sixth Semester

| S. No. | Code | Title | Area | Cr | L | T | P | TH | PH | CWS | PRS | MTE | ETE | PRE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. | IT302 | Compiler Design | DCC | 4 | 3 | 0 | 2 | 3 | - | 15 | 25 | 20 | 40 | - |
| 2. | IT304 | Software Engineering | DCC | 4 | 3 | 1 | 0 | 3 | - | 25 | - | 25 | 50 | - |
| 3. | IT306 | Artificial Intelligence and Expert Systems | DCC | 4 | 3 | 0 | 2 | 3 | - | 15 | 25 | 20 | 40 | - |
| 4. | IT3xx | Department Elective Course -3 | DEC/ GEC | 4 | 3 | 0/1 | 2/0 | 3 | - | 15/ 25 | 25/- | 20 /25 | 40/ 50 | - |
| 5. | IT3xx | Department Elective Course -4 | DEC/ GEC | 4 | 3 | 0/1 | 2/0 | 3 | - | 15/ 25 | 25/- | 20 /25 | 40/ 50 | - |
| 6. | HU302 | Technical Communications | HMC | 2 | 0 | 0 | 2 | 0 | - | 25 | - | 25 | 50 | - |
| | | **Total** | | **22** | | | | | | | | | | |

## IV Year: Seventh Semester

| S. No. | Code | Title | Area | Cr | L | T | P | TH | PH | CWS | PRS | MTE | ETE | PRE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. | IT401 | B.Tech. Project-I | DCC | 4 | | | | | | | | | | |
| 2. | IT403 | Training Seminar | DCC | 2 | | | | | | | | | | |
| 3. | IT405 | Data-warehouse and Data mining | DCC | 4 | 3 | 0 | 2 | 3 | - | 15 | 25 | 20 | 40 | - |
| 4. | IT407 | Information and Network Security | DCC | 4 | 3 | 1 | 0 | 3 | - | 25 | - | 25 | 50 | - |
| 5. | IT4xx | Department Elective Course- 5 | DEC/ GEC | 4 | 3 | 0/1 | 2/0 | 3 | 0 | 15/ 25 | 25/- | 20 /25 | 40/ 50 | - |
| 6. | IT4xx | Department Elective Course- 6 | DEC/ GEC | 4 | 3 | 0/1 | 2/0 | 3 | 0 | 15/ 25 | 25/- | 20 /25 | 40/ 50 | - |
| | | **Total** | | **22** | | | | | | | | | | |

## IV Year: Eighth Semester

| S. No. | Code | Title | Area | Cr | L | T | P | TH | PH | CWS | PRS | MTE | ETE | PRE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. | IT402 | B.Tech. Project-II | DCC | 8 | | | | | | | | | | |
| 2. | IT404 | Big Data Analytics | DCC | 4 | 3 | 0 | 2 | 3 | - | 15 | 25 | 20 | 40 | - |
| 3. | IT4xx | Department Elective Course-7 | DEC/ GEC | 4 | 3 | 0/1 | 2/0 | 3 | 0 | 15/ 25 | 25/- | 20 /25 | 40/ 50 | |
| 4. | IT4xx | Department Elective Course-8 | DEC/ GEC | 4 | 3 | 0/1 | 2/0 | 3 | 0 | 15/ 25 | 25/- | 20 /25 | 40/ 50 | |
| | | **Total** | | **20** | | | | | | | | | | |

## List of Departmental Elective Courses

| S.No. | Subject Code | Subjects | Elective No. |
|---|---|---|---|
| 1. | IT-305 | Computer Graphics | DEC- 1, 2 |
| 2. | IT-307 | Pattern Recognition | |
| 3. | IT-309 | Information Theory and coding | |
| 4. | IT-311 | Advanced Data Structures | |
| 5. | IT-313 | Microprocessor & Interfacing | |
| 6. | IT-315 | Distributed Systems | |
| 7. | IT-317 | Soft Computing | |
| 8. | IT-319 | Data Compression | |
| 9. | IT-321 | Malware Analysis | |
| 10. | IT-308 | Optimization Techniques | DEC – 3, 4 |
| 11. | IT-310 | Parallel Algorithms | |
| 12. | IT-312 | Cyber Forensics | |
| 13. | IT-314 | Optical Networks | |
| 14. | IT-316 | High Speed Networks | |
| 15. | IT-318 | Advanced Database Management Systems | |
| 16. | IT-320 | Multimedia System Design | |
| 17. | IT-322 | Real Time System | |
| 18. | IT-324 | Machine Learning | |
| 19. | IT-326 | Object Oriented Software Engineering | |
| 20. | IT-409 | Enterprise Java Programming | DEC 5, 6 |
| 21. | IT-411 | Digital Image Processing | |
| 22. | IT-413 | VLSI Design | |
| 23. | IT-415 | Software Project Management | |
| 24. | IT-417 | High Performance Computing | |
| 25. | IT-419 | Grid and Cluster Computing | |
| 26. | IT-421 | Swarm Optimization & Evolutionary Computing | |
| 27. | IT-423 | Computational Number Theory and Cryptography | |
| 28. | IT-425 | Natural Language Processing | |
| 29. | IT-427 | Intrusion Detection and Information Warfare | |
| 30. | IT-406 | Web Technology | DEC – 7, 8 |
| 31. | IT-408 | Parallel Computer Architecture | |
| 32. | IT-410 | Intellectual Property Rights | |
| 33. | IT-412 | Bio Informatics | |
| 34. | IT-414 | Software Testing | |
| 35. | IT-416 | Nomadic Computing | |
| 36. | IT-418 | Cloud Computing | |
| 37. | IT-420 | Computer Vision | |
| 38. | IT-422 | Embedded Systems | |
| 39. | IT-424 | Semantic Web and Web Mining | |
| 40. | IT-426 | Software quality and metrics | |

# DEPARTMENT OF MECHANICAL ENGINEERING

The Department of Mechanical Engineering has seen considerable growth since its inception in 1941 with the intake rising from 30 to 360 (246 for Mechanical, 60 for Production & Industrial Engineering and 60 for Mechcanical Engineering with specialization in Automotive Engineering). The department is fully equipped with modern facilities and labs including newly developed design centre having state of art technology to meet the current and future requirements of industry and academics. The Department also offers four years' B. Tech. Program for working Diploma Engineers with an annual intake of 60 students. The B.Tech Production and Industrial Engineering being offered by the department has recently been accredited by NBA for three years.

The department possesses modern laboratories equipped with latest experimental set-ups and research facilities for instrumentation, experimental stress analysis, strength of materials, fluid mechanics, I.C. engines, automotive engineering, robotics, heat transfer, solar energy, flexible manufacturing system, computational fluid dynamics supported by software like view-flex, CAD-CAM and I.C. engines design. Cad Lab has softwares like NX-LAD, NXCAM, AUTOCAD Invertor, Catia, Techomatix, Abaqus, Lsydyna, NX-Nartran, Hypermesh, Hyperworks, MD-ADAMS, Dynaform, MATLAB, SOLIDWORKS etc. Fluent software is available in the CFD centre. Newly developed design centre has softwares likes LS-DYNA, SOLIDWORKS, Symbols-Sonata and likely to add 3D printer (rapid prototyping) very soon. The department has developed eco-friendly technology using alternate refrigerants in the RAC lab for mitigating global warming and Ozone depletion.

Research and development is facilitated by NT enable workstations and competitive robots with digital controller. In addition; microprocessors, micro controllers, PLC, spectrum analyzer and logic analyzer are also available for students' project work. The department has a modern workshop equipped with latest machinery in Fitting, Machine shop and facility of welding shop comprising of pulse TIG, ultrasonic welding

and submerged arc welding. The students are given hands on experience on CNC Milling & CNC lathe machine. Apart from these machines, EDM & wire EDM machine are also used for training of students. Most modern labs and research facilities for fluid mechanics, ID engines, automotive engineering, robotics, solar energy, flexible manufacturing system are also established in the department. Industrial Engineering lab has SPSS, Witness and Lingo 7 softwares for tackling industry relevant problems.

The department is known worldwide for its research in the area of alternative fules; bio-origin fuels in particular. Different species of TBO and non edible oils such as Jatropha, and Karanja are converted to biodiesel confirming to ASTM D-6751 using most modern production facilities. Centre for Advanced Studies and Research in Automotive Engineering has developed small to medium capacity bio-diesel processing units. The research projects sponsored by different government organization and industry such as Ministry of New and Renewable Energy, Govt. of India, and Petroleum Conservation Research Association, Yanmar Co. Ltd., Osaka, Japan had been completed at the Centre. An Indo-Spanis Collaborative Research Project Application of supercritical technology for the synthesis of biodiesel from nonedible oils ((Jatropha curcas and Pongamiapinnata) using heterogeneous catalysts in collaboration between Delhi Technological University and University of Murcia, Spain is under progress at the centre. The centre has also been consultant to World Bank Funded Project “Fences for Fuel.” The students from the centre have participated in renowned International conferences such as SAE World Congress and presented their research findings. The centre has most modern analytical facilities along with vast number of engines for carrying out exhaustive studies on variety of alternative fuels. The students at the centre also developed an indigenous PEM fuel cell which is first of kind in India.

The department has also carried a research project titles “Developed of Ice slurry production Technology” under research promoting scheme by AICTE. A project for production of biodiesel from waste cooking oil (generated hotels & restaurant etc) has also been awarded by Department of Health and Environment, Govt. of NCT of Delhi. The department also organizes invited lectures, conferences and short-term courses

for the benefits of students and faculty members.

The Mechanical Engineering Department has an active SAE student chapter, a first in India and one of the largest student chapters in the world. This is the only student chapter which takes part almost all student vehicle design competitions of SAE like Formula Students, Mini Baja, and Super Mileage besides other international vehicle design competitions. Formula Students car developed by the students of the department participated in the international competition held at Silver Stone Circuit, U.K. in July 2012. The students of the department have taken a keen initiative in development of a solar passenger car (Solaris) which participated in South Africa Solar World Challenge 2012. The Mini Baja team participated in SAE-mini Baja-2012 at Auburn University, USA and won appreciation and accolades. The students have also participated in the competition conducted by NASA USA men paddled moon vehicle by the name MOON BAGGI and CHANDER YAN, where DTU students have won prestigious awards. The department also has ISHRAE, ASME, IMech student chapter. Under and specialized lectures are conducted regular basis.

The department has well qualified faculty members, who produce numerous publications in national/international journals of high impact factor, highlighting the emphasis on research and development. The department has made strides in percolating the research culture even among UG students besides PG students and large number of publications and patents are filed by the students. Considering the growing need to protect the environment, the students of the department are working on carbon sequestration techniques and also working on algae multiplication with a view to reduce carbon foot print. The photobioreactor developed by the department is first in India and exhaustive research work on mass propagation of algal biofuel is carried by students.

# BACHELOR OF TECHNOLOGY (MECHANICAL ENGINEERING)

## I Year: First Semester

| Teaching Scheme | | | | | Contact Hours/ Week | | | Exam Duration (h) | | Relative Weights (%) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| S. No. | Subject Code | Course Title | Subject Area | Credit | L | T | P | Theory | Practical | CWS | PRS | MTE | ETE | PRE |
| **Group A** | | | | | | | | | | | | | | |
| 1 | MA101 | Mathematics - I | ASC | 4 | 3 | 1 | 0 | 3 | 0 | 25 | - | 25 | 50 | - |
| 2 | AP101 | Physics – I | ASC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 3 | AC101 | Chemistry | ASC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 4 | ME101 | Basic Mechanical Engineering | AEC | 4 | 4 | 0 | 0 | 3 | 0 | 25 | - | 25 | 50 | - |
| 5 | ME103 | Workshop Practice | AEC | 2 | 0 | 0 | 3 | 0 | 3 | - | 50 | - | - | 50 |
| 6 | HU101 | Communication Skills | HMC | 3 | 3 | 0 | 0 | 3 | 0 | 25 | - | 25 | 50 | - |
| | **Total** | | | **21** | 16 | 1 | 7 | | | | | | | |
| **Group B** | | | | | | | | | | | | | | |
| 1 | MA101 | Mathematics - I | ASC | 4 | 3 | 1 | 0 | 3 | 0 | 25 | - | 25 | 50 | - |
| 2 | AP101 | Physics – I | ASC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 3 | EE101 | Basic Electrical Engineering | AEC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 4 | CO101 | Programming Fundamentals | AEC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 5 | ME105 | Engineering Graphics | AEC | 2 | 0 | 0 | 3 | 0 | 3 | - | 50 | - | - | 50 |
| 6 | EN101 | Introduction to Environmental Science | AEC | 3 | 3 | 0 | 0 | 3 | 0 | 25 | - | 25 | 50 | - |
| | **Total** | | | **21** | 15 | 1 | 9 | | | | | | | |

## I Year: Second Semester

| Teaching Scheme | | | | | Contact Hours/ Week | | | Exam Duration (h) | | Relative Weights (%) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| S. No. | Subject Code | Course Title | Subject Area | Credit | L | T | P | Theory | Practical | CWS | PRS | MTE | ETE | PRE |
| **Group A** | | | | | | | | | | | | | | |
| 1 | MA102 | Mathematics -II | ASC | 4 | 3 | 1 | 0 | 3 | 0 | 25 | - | 25 | 50 | - |
| 2 | AP102 | Physics – II | ASC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 3 | EE102 | Basic Electrical Engineering | AEC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 4 | CO102 | Programming Fundamentals | AEC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 5 | ME102 | Engineering Graphics | AEC | 2 | 0 | 0 | 3 | 0 | 3 | - | 50 | - | - | 50 |
| 6 | EN102 | Introduction to Environmental Science | AEC | 3 | 3 | 0 | 0 | 3 | 0 | 25 | - | 25 | 50 | - |
| | **Total** | | | **21** | 15 | 1 | 9 | | | | | | | |
| **Group B** | | | | | | | | | | | | | | |
| 1 | MA102 | Mathematics-II | ASC | 4 | 3 | 1 | 0 | 3 | 0 | 25 | - | 25 | 50 | - |
| 2 | AP102 | Physics – II | ASC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 3 | AC102 | Chemistry | ASC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 4 | ME104 | Basic Mechanical Engineering | AEC | 4 | 4 | 0 | 0 | 3 | 0 | 25 | - | 25 | 50 | - |
| 5 | ME106 | Workshop Practice | AEC | 2 | 0 | 0 | 3 | 0 | 3 | - | 50 | - | - | 50 |
| 6 | HU102 | Communication Skills | HMC | 3 | 3 | 0 | 0 | 3 | 0 | 25 | - | 25 | 50 | - |
| | **Total** | | | **21** | 16 | 1 | 7 | | | | | | | |

## II Year: Third Semester

| S. No. | Code | Title | Area | Cr | L | T | P | TH | PH | CWS | PRS | MTE | ETE | PRE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. | PE251 | Engineering Materials & Metallurgy | AEC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | |
| 2. | ME201 | Mechanics of Solids | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 3. | ME203 | Thermal Engineering-I | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 4. | ME205 | Machine Drawing and Solid Modeling | DCC | 4 | 0 | 0 | 6 | 0 | 3 | 0 | 50 | - | - | 50 |
| 5. | ME207 | Engineering Analysis and Design | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 6. | MG201 | Fundamentals of Management | HMC | 3 | 3 | 0 | 0 | 3 | 0 | 25 | | 25 | 50 | - |
| | | **Total** | | **23** | | | | | | | | | | |

## II Year: Fourth Semester

| S. No. | Code | Title | Area | Cr | L | T | P | TH | PH | CWS | PRS | MTE | ETE | PRE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. | PE252 | Manufacturing Machines | AEC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 2. | ME202 | Thermal Engineering-II | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 3. | ME204 | Fluid Mechanics | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 4. | ME206 | Kinematics of Machines | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 5. | ME208 | Manufacturing Technology-I | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 6. | HU202 | Engineering Economics | HMC | 3 | 3 | 0 | 0 | 3 | 0 | 25 | | 25 | 50 | - |
| | | **Total** | | **23** | | | | | | | | | | |

## III Year: Fifth Semester

| S. No. | Code | Title | Area | Cr | L | T | P | TH | PH | CWS | PRS | MTE | ETE | PRE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. | ME301 | Fluid Systems | DCC | 4 | 3 | 0 | 2 | 3 | - | 15 | 15 | 30 | 40 | - |
| 2. | ME303 | Dynamics of Machines | DCC | 4 | 3 | 0 | 2 | 3 | - | 15 | 15 | 30 | 40 | - |
| 3. | ME305 | Design of Machine Elements | DCC | 4 | 3 | 0 | 2 | 3 | - | 15 | 15 | 30 | 40 | - |
| 4. | ME307 | Manufacturing Technology-II | DCC | 4 | 3 | 0 | 2 | 3 | - | 15 | 15 | 30 | 40 | - |
| 5. | UExxx | Open Elective Course | OEC | 3 | 3 | 0 | 0 | 3 | - | 25 | - | 25 | 50 | - |
| 6. | HU301 | Technical Communication | HMC | 2 | 2 | 0 | 0 | 3 | - | 25 | - | 25 | 50 | - |
| | | **Total** | | **21** | | | | | | | | | | |

## III Year: Sixth Semester

| S. No. | Code | Title | Area | Cr | L | T | P | TH | PH | CWS | PRS | MTE | ETE | PRE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. | ME302 | Heat And Mass Transfer | DCC | 4 | 3 | 0 | 2 | 3 | - | 15 | 15 | 30 | 40 | |
| 2. | ME304 | Production and Operations Management | DCC | 4 | 3 | 0 | 2 | 3 | - | 15 | 15 | 30 | 40 | |
| 3. | MExxx | Departmental Elective Course -1 | DEC/ GEC | 4 | 3 | 0/1 | 2/0 | 3 | - | 15/ 25 | 15/- | 30 /25 | 40/ 50 | - |
| 4. | MExxx | Departmental Elective Course-2 | DEC/ GEC | 4 | 3 | 0/1 | 2/0 | 3 | - | 15/ 25 | 15/- | 30 /25 | 40/ 50 | |
| 5. | MExxx | Departmental Elective Course-3 | DEC/ GEC | 4 | 3 | 0/1 | 2/0 | 3 | - | 15/ 25 | 15/- | 30 /25 | 40/ 50 | |
| 6. | HU304 | Professional Ethics &Human Values | HMC | 2 | 2 | 0 | 0 | 3 | - | 25 | | 25 | 50 | |
| | | **Total** | | **22** | | | | | | | | | | |

## IV Year: Seventh Semester

| S. No. | Code | Title | Area | Cr | L | T | P | TH | PH | CWS | PRS | MTE | ETE | PRE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. | ME401 | B. Tech Project-I | DCC | 4 | | | | | | | | | | |
| 2. | ME 403 | Training Seminar | DCC | 2 | | | | | | | | | | |
| 3. | ME 407 | Refrigeration & Air Conditioning | DCC | 4 | 3 | 0 | 2 | 3 | - | 15 | 15 | 30 | 40 | |
| 4. | ME4xx | Departmental Elective Course-4 | DEC/ GEC | 4 | 3 | 0/1 | 2/0 | 3 | - | 15/ 25 | 15/- | 30 /25 | 40/ 50 | |
| 5. | ME4xx | Departmental Elective Course -5 | DEC/ GEC | 4 | 3 | 0/1 | 2/0 | 3 | - | 15/ 25 | 15/- | 30 /25 | 40/ 50 | |
| 6. | ME4xx | Departmental Elective Course -6 | DEC/ GEC | 4 | 3 | 0/1 | 2/0 | 3 | - | 15/ 25 | 15/- | 30 /25 | 40/ 50 | |
| | | **Total** | | **22** | | | | | | | | | | |

## IV Year: Eighth Semester

| S. No. | Code | Title | Area | Cr | L | T | P | TH | PH | CWS | PRS | MTE | ETE | PRE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. | ME 402 | B. Tech Project-II | DCC | 8 | | | | | | | | | | |
| 2. | ME 404 | Industrial Engineering | DCC | 4 | 3 | 0 | 2 | 3 | | 15 | 15 | 30 | 40 | |
| 3. | ME 4xx | Departmental Elective Course -7 | DEC/ GEC | 4 | 3 | 0/1 | 2/0 | 3 | 0 | 15/ 25 | 15/- | 30 /25 | 40/ 50 | |
| 4. | ME4xx | Departmental Elective Course -8 | DEC/ GEC | 4 | 3 | 0/1 | 2/0 | 3 | 0 | 15/ 25 | 15/- | 30 /25 | 40/ 50 | |
| | | **Total** | | **20** | | | | | | | | | | |

## List of Departmental Elective Courses

| S.No. | Subject Code | Subject | Elective No. |
|---|---|---|---|
| 1. | ME -306 | Finite Element Method | DEC -1 |
| 2. | ME -308 | Gas Dynamics & Jet Propulsion | |
| 3. | ME -310 | Automation in Manufacturing | |
| 4. | ME -312 | Quality Management & Six Sigma Applications | |
| 5. | ME -314 | Mechanical Vibrations | DEC -2 |
| 6. | ME -316 | Power Plant Engineering | |
| 7. | ME -318 | Computer Aided Manufacturing | |
| 8. | ME -320 | Reliability & Maintenance Engineering | |
| 9. | ME -322 | Design of Mechanical Assemblies | DEC-3 |
| 10. | ME -324 | System modeling, simulation and analysis | |
| 11. | ME -326 | Pressure vessels and Piping Technology | |
| 12. | ME -328 | Composite Material Technology | |
| 13. | ME -409 | Mechatronics & Control | DEC -4 |
| 14. | ME -411 | I.C. Engines | |
| 15. | ME -413 | Metrology | |
| 16. | ME -415 | Project Management | |
| 17. | ME -419 | Robotics & Automation | DEC -5 |
| 18. | ME -421 | Computational Fluid Dynamics | |
| 19. | ME -423 | Advanced Manufacturing Processes | |
| 20. | ME -427 | Operations Research | |
| 21. | ME -429 | Industrial Tribology | DEC -6 |
| 22. | ME -431 | Non-conventional Energy Sources | |
| 23. | ME -433 | Computer Integrated Manufacturing | |
| 24. | ME -435 | Optimization techniques | |
| 25. | ME -406 | Elastic & Plastic Behaviour of Materials | DEC -7 |
| 26. | ME -408 | Combustion Generated Pollution | |
| 27. | ME -410 | Advances in Welding & Casting | |
| 28. | ME -412 | Operations and Manufacturing Strategy | |
| 29. | ME -414 | Fracture Mechanics | DEC-8 |
| 30. | ME -416 | Nuclear Energy | |
| 31. | ME -418 | Supply Chain Management | |
| 32. | ME -420 | Materials management | |

# BACHELOR OF TECHNOLOGY (MECHANICAL ENGINEERING WITH SPECIALIZATION IN AUTOMOTIVE ENGINEERING)

## I Year: First Semester

| Teaching Scheme | | | | | Contact Hours/ Week | | | Exam Duration (h) | | Relative Weights (%) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| S. No. | Subject Code | Course Title | Subject Area | Credit | L | T | P | Theory | Practical | CWS | PRS | MTE | ETE | PRE |
| **Group A** | | | | | | | | | | | | | | |
| 1 | MA101 | Mathematics - I | ASC | 4 | 3 | 1 | 0 | 3 | 0 | 25 | - | 25 | 50 | - |
| 2 | AP101 | Physics – I | ASC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 3 | AC101 | Chemistry | ASC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 4 | ME101 | Basic Mechanical Engineering | AEC | 4 | 4 | 0 | 0 | 3 | 0 | 25 | - | 25 | 50 | - |
| 5 | ME103 | Workshop Practice | AEC | 2 | 0 | 0 | 3 | 0 | 3 | - | 50 | - | - | 50 |
| 6 | HU101 | Communication Skills | HMC | 3 | 3 | 0 | 0 | 3 | 0 | 25 | - | 25 | 50 | - |
| | **Total** | | | **21** | 16 | 1 | 7 | | | | | | | |
| **Group B** | | | | | | | | | | | | | | |
| 1 | MA101 | Mathematics - I | ASC | 4 | 3 | 1 | 0 | 3 | 0 | 25 | - | 25 | 50 | - |
| 2 | AP101 | Physics – I | ASC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 3 | EE101 | Basic Electrical Engineering | AEC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 4 | CO101 | Programming Fundamentals | AEC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 5 | ME105 | Engineering Graphics | AEC | 2 | 0 | 0 | 3 | 0 | 3 | - | 50 | - | - | 50 |
| 6 | EN101 | Introduction to Environmental Science | AEC | 3 | 3 | 0 | 0 | 3 | 0 | 25 | - | 25 | 50 | - |
| | **Total** | | | **21** | 15 | 1 | 9 | | | | | | | |

## I Year: Second Semester

| Teaching Scheme | | | | | Contact Hours/ Week | | | Exam Duration (h) | | Relative Weights (%) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| S. No. | Subject Code | Course Title | Subject Area | Credit | L | T | P | Theory | Practical | CWS | PRS | MTE | ETE | PRE |
| **Group A** | | | | | | | | | | | | | | |
| 1 | MA102 | Mathematics – II | ASC | 4 | 3 | 1 | 0 | 3 | 0 | 25 | - | 25 | 50 | - |
| 2 | AP102 | Physics – II | ASC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 3 | EE102 | Basic Electrical Engineering | AEC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 4 | CO102 | Programming Fundamentals | AEC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 5 | ME102 | Engineering Graphics | AEC | 2 | 0 | 0 | 3 | 0 | 3 | - | 50 | - | - | 50 |
| 6 | EN102 | Introduction to Environmental Science | AEC | 3 | 3 | 0 | 0 | 3 | 0 | 25 | - | 25 | 50 | - |
| | **Total** | | | **21** | 15 | 1 | 9 | | | | | | | |
| **Group B** | | | | | | | | | | | | | | |
| 1 | MA102 | Mathematics -II | ASC | 4 | 3 | 1 | 0 | 3 | 0 | 25 | - | 25 | 50 | - |
| 2 | AP102 | Physics – II | ASC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 3 | AC102 | Chemistry | ASC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 4 | ME104 | Basic Mechanical Engineering | AEC | 4 | 4 | 0 | 0 | 3 | 0 | 25 | - | 25 | 50 | - |
| 5 | ME106 | Workshop Practice | AEC | 2 | 0 | 0 | 3 | 0 | 3 | - | 50 | - | - | 50 |
| 6 | HU102 | Communication Skills | HMC | 3 | 3 | 0 | 0 | 3 | 0 | 25 | - | 25 | 50 | - |
| | **Total** | | | **21** | 16 | 1 | 7 | | | | | | | |

## II Year: Third Semester

| S. No. | Code | Title | Area | Cr | L | T | P | TH | PH | CWS | PRS | MTE | ETE | PRE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. | PE261 | Quantitative Techniques | AEC | 4 | 3 | 1 | 0 | 3 | 0 | 25 | - | 25 | 50 | - |
| 2. | AE201 | Engineering Mechanics | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 25 | 20 | 40 | - |
| 3. | AE203 | Thermodynamics | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 25 | 20 | 40 | - |
| 4. | AE205 | Manufacturing Machines | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 25 | 20 | 40 | - |
| 5. | AE207 | Engineering Analysis and Design | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 6. | MG201 | Fundamentals of Management | HMC | 3 | 3 | 0 | 0 | 3 | 0 | 25 | - | 25 | 50 | - |
| | | **Total** | | **23** | | | | | | | | | | |

## II Year: FourthSemester

| S. No. | Code | Title | Area | Cr | L | T | P | TH | PH | CWS | PRS | MTE | ETE | PRE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. | EE272 | Automotive Electrical and Electronics | AEC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 25 | 20 | 40 | - |
| 2. | AE202 | Heat and Mass Transfer | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 25 | 20 | 40 | - |
| 3. | AE204 | Theory of Machines | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 25 | 20 | 40 | - |
| 4. | AE206 | Mechanics of Solids | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 25 | 20 | 40 | - |
| 5. | AE208 | Material Engineering & Metallurgy | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 25 | 20 | 40 | - |
| 6. | HU202 | Engineering Economics | HMC | 3 | 3 | 0 | 0 | 3 | 0 | 25 | - | 25 | 50 | - |
| | | **Total** | | **23** | | | | | | | | | | |

## III Year: Fifth Semester

| S. No. | Code | Title | Area | Cr | L | T | P | TH | PH | CWS | PRS | MTE | ETE | PRE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. | AE301 | Manufacturing Technology | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 25 | 20 | 40 | - |
| 2. | AE303 | Fluid Mechanics And Hydraulic Machines | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 25 | 20 | 40 | - |
| 3. | AExxx | Departmental Elective Course -1 | DEC/ GEC | 4 | 3 | 0/1 | 2/0 | 3 | 0 | 15/ 25 | 15/- | 30 /25 | 40/ 50 | - |
| 4. | AExxx | Departmental Elective Course -2 | DEC/ GEC | 4 | 3 | 0/1 | 2/0 | 3 | 0 | 15/ 25 | 15/- | 30 /25 | 40/ 50 | - |
| 5. | UExxx | Open Elective Course | OEC | 3 | 3 | 0 | 0 | 3 | 0 | 25 | - | 25 | 50 | - |
| 6. | HU301 | Technical Communication | HMC | 2 | 3 | 0 | 0 | 3 | 0 | 25 | - | 25 | 50 | - |
| | | **Total** | | **21** | | | | | | | | | | |

## III Year: Sixth Semester

| S. No. | Code | Title | Area | Cr | L | T | P | TH | PH | CWS | PRS | MTE | ETE | PRE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. | AE302 | Design of Machine Elements | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 25 | 20 | 40 | - |
| 2. | AE304 | Internal Combustion Engines | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 25 | 20 | 40 | - |
| 3. | AE306 | Design of Automobile Components | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 25 | 20 | 40 | - |
| 4. | AExxx | Departmental Elective Course -3 | DEC/ GEC | 4 | 3 | 0/1 | 2/0 | 3 | 0 | 15/ 25 | 15/- | 30 /25 | 40/ 50 | - |
| 5. | AExxx | Departmental Elective Course -4 | DEC/ GEC | 4 | 3 | 0/1 | 2/0 | 3 | 0 | 15/ 25 | 15/- | 30 /25 | 40/ 50 | - |
| 6. | HU304 | Professional Ethics and Human Values | HMC | 2 | 3 | 0 | 0 | 3 | 0 | 25 | - | 25 | 50 | - |
| | | **Total** | | **22** | | | | | | | | | | |

## IV Year: Seventh Semester

| S. No. | Code | Title | Area | Cr | L | T | P | TH | PH | CWS | PRS | MTE | ETE | PRE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. | AE401 | B.Tech. Project-I | DCC | 4 | | | | | | | | | | |
| 2. | AE403 | Training Seminar | DCC | 2 | | | | | | | | | | |
| 3. | AE405 | Alternative Fuels And Energy Systems | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 25 | 20 | 40 | - |
| 4. | AE407 | Production And Operations Management | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 25 | 20 | 40 | - |
| 5. | AE409 | Computer Aided Vehicle Design And Safety | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 25 | 20 | 40 | - |
| 6. | AE4xx | Departmental Elective Course -5 | DEC/ GEC | 4 | 3 | 0/1 | 2/0 | 3 | 0 | 15/ 25 | 15/- | 30 /25 | 40/ 50 | |
| | | **Total** | | **22** | | | | | | | | | | |

## IV Year Eighth Semester

| S. No. | Code | Title | Area | Cr | L | T | P | TH | PH | CWS | PRS | MTE | ETE | PRE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. | AE402 | B.Tech Project-II | DCC | 8 | | | | | | | | | | |
| 2. | AE4xx | Departmental Elective Course -6 | DEC/ GEC | 4 | 3 | 0/1 | 2/0 | 3 | 0 | 15/ 25 | 15/- | 30/ 25 | 40/ 50 | |
| 3. | AE4xx | Departmental Elective Course -7 | DEC/ GEC | 4 | 3 | 0/1 | 2/0 | 3 | 0 | 15/ 25 | 15/- | 30 /25 | 40/ 50 | |
| 4. | AE4xx | Departmental Elective Course -8 | DEC/ GEC | 4 | 3 | 0/1 | 2/0 | 3 | 0 | 15/ 25 | 15/- | 30 /25 | 40/ 50 | |
| | | **Total** | | **20** | | | | | | | | | | |

## List of Departmental Elective Courses

| S.No. | Elective Code | Title of Elective | Elective no. |
|---|---|---|---|
| 1 | AE-305 | Automotive Aerodynamics & CFD | DEC-1, 2 |
| 2 | AE-307 | Combustion Generated Pollution | |
| 3 | AE-309 | Operation Research | |
| 4 | AE-311 | Tyre Technology | |
| 5 | AE-313 | Thermal Engineering | |
| 6 | AE-315 | Turbo machinery and gas dynamics | |
| 7 | AE-317 | Power units and transmission | |
| 8 | AE-319 | Computer Simulation of I.C. Engine Process | |
| 9 | AE-321 | Advanced strength of material | |
| 10 | AE-323 | Finite Element Methods and Applications | |
| 11 | AE-308 | Measurement and Instrumentation | DEC-3,4 |
| 12 | AE-310 | Advanced Manufacturing Technology | |
| 13 | AE-312 | Quality Management & Six Sigma Applications | |
| 14 | AE-314 | Metrology | |
| 15 | AE-316 | Advances in Welding & Casting | |
| 16 | AE-318 | Materials for automobile components | |
| 17 | AE-320 | Tribology and lubrication | |
| 18 | AE-322 | Reliability & Maintenance Engineering | |
| 19 | AE-324 | Elastic & Plastic Behaviour of Materials | |
| 20 | AE-326 | Production Planning & Inventory Control | |
| 21 | AE-411 | Vehicle Maintenance & Tribology | DEC-5 |
| 22 | AE-413 | Vehicle Transport Management | |
| 23 | AE-415 | Power Plant Engineering | |
| 24 | AE-417 | Robotics & Automation | |
| 25 | AE-419 | Nuclear Energy | |

| S.No. | Elective Code | Title of Elective | Elective no. |
|---|---|---|---|
| 26 | AE-404 | Computer Integrated Manufacturing Systems | DEC-6 , DEC-7 and DEC-8 |
| 27 | AE-406 | Total Life Cycle Management | |
| 28 | AE-408 | Refrigeration & Automobile Air Conditioning | |
| 29 | AE-410 | Fuel Cells | |
| 30 | AE-412 | Modern Vehicle Technology | |
| 26 | AE-414 | Automobiles Vibration System Analysis | |
| 27 | AE-416 | Renewable Sources of Energy | |
| 28 | AE-418 | Supply Chain Management | |
| 29 | AE-420 | Vehicle Safety Engineering | |
| 30 | AE-422 | Packaging Technology | |
| 31 | AE-424 | Mechatronics | |
| 32 | AE-426 | Financial Management | |
| 33 | AE-428 | Fracture mechanics | |
| 34 | AE-430 | Product design and development | |
| 35 | AE-432 | Tractors and Farm Equipment and Off Road Vehicles | |
| 36 | AE-434 | Automobile process control | |

# BACHELOR OF TECHNOLOGY
# (PRODUCTION AND INDUSTRIAL ENGINEERING)

## I Year: First Semester

| Teaching Scheme | | | | | Contact Hours/ Week | | | Exam Duration (h) | | Relative Weights (%) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| S. No. | Subject Code | Course Title | Subject Area | Credit | L | T | P | Theory | Practical | CWS | PRS | MTE | ETE | PRE |
| **Group A** | | | | | | | | | | | | | | |
| 1 | MA101 | Mathematics - I | ASC | 4 | 3 | 1 | 0 | 3 | 0 | 25 | - | 25 | 50 | - |
| 2 | AP101 | Physics – I | ASC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 3 | AC101 | Chemistry | ASC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 4 | ME101 | Basic Mechanical Engineering | AEC | 4 | 4 | 0 | 0 | 3 | 0 | 25 | - | 25 | 50 | - |
| 5 | ME103 | Workshop Practice | AEC | 2 | 0 | 0 | 3 | 0 | 3 | - | 50 | - | - | 50 |
| 6 | HU101 | Communication Skills | HMC | 3 | 3 | 0 | 0 | 3 | 0 | 25 | - | 25 | 50 | - |
| | **Total** | | | **21** | 16 | 1 | 7 | | | | | | | |
| **Group B** | | | | | | | | | | | | | | |
| 1 | MA101 | Mathematics - I | ASC | 4 | 3 | 1 | 0 | 3 | 0 | 25 | - | 25 | 50 | - |
| 2 | AP101 | Physics – I | ASC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 3 | EE101 | Basic Electrical Engineering | AEC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 4 | CO101 | Programming Fundamentals | AEC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 5 | ME105 | Engineering Graphics | AEC | 2 | 0 | 0 | 3 | 0 | 3 | - | 50 | - | - | 50 |
| 6 | EN101 | Introduction to Environmental Science | AEC | 3 | 3 | 0 | 0 | 3 | 0 | 25 | - | 25 | 50 | - |
| | **Total** | | | **21** | 15 | 1 | 9 | | | | | | | |

## I Year: Second Semester

| Teaching Scheme | | | | | Contact Hours/ Week | | | Exam Duration (h) | | Relative Weights (%) | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| S. No. | Subject Code | Course Title | Subject Area | Credit | L | T | P | Theory | Practical | CWS | PRS | MTE | ETE | PRE |
| **Group A** | | | | | | | | | | | | | | |
| 1 | MA102 | Mathematics-II | ASC | 4 | 3 | 1 | 0 | 3 | 0 | 25 | - | 25 | 50 | - |
| 2 | AP102 | Physics – II | ASC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 3 | EE102 | Basic Electrical Engineering | AEC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 4 | CO102 | Programming Fundamentals | AEC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 5 | ME102 | Engineering Graphics | AEC | 2 | 0 | 0 | 3 | 0 | 3 | - | 50 | - | - | 50 |
| 6 | EN102 | Introduction to Environmental Science | AEC | 3 | 3 | 0 | 0 | 3 | 0 | 25 | - | 25 | 50 | - |
| | **Total** | | | **21** | 15 | 1 | 9 | | | | | | | |
| **Group B** | | | | | | | | | | | | | | |
| 1 | MA102 | Mathematics- II | ASC | 4 | 3 | 1 | 0 | 3 | 0 | 25 | - | 25 | 50 | |
| 2 | AP102 | Physics – II | ASC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | |
| 3 | AC102 | Chemistry | ASC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | |
| 4 | ME104 | Basic Mechanical Engineering | AEC | 4 | 4 | 0 | 0 | 3 | 0 | 25 | - | 25 | 50 | |
| 5 | ME106 | Workshop Practice | AEC | 2 | 0 | 0 | 3 | 0 | 3 | - | 50 | - | - | |
| 6 | HU102 | Communication Skills | HMC | 3 | 3 | 0 | 0 | 3 | 0 | 25 | - | 25 | 50 | |
| | **Total** | | | **21** | 16 | 1 | 7 | | | | | | | |

## II Year: Third Semester

| S. No. | Code | Title | Area | Cr | L | T | P | TH | PH | CWS | PRS | MTE | ETE | PRE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. | ME261 | Kinematic And Dynamic Of Machines | AEC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | |
| 2. | PE201 | Engineering Materials & Metallurgy | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | |
| 3. | PE203 | Thermal Engineering-I | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | |
| 4. | PE205 | Manufacturing Machines | DCC | 4 | 3 | 0 | 2 | 3 | 2 | 15 | 15 | 30 | 40 | |
| 5. | PE207 | Engineering Analysis And Design(Modeling And Simulation) | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | |
| 6. | MG201 | Fundamentals of Management | HMC | 3 | 3 | 0 | 0 | 3 | 0 | 25 | | 25 | 50 | |
| | | **Total** | | **23** | | | | | | | | | | |

## II Year: Fourth Semester

| S. No. | Code | Title | Area | Cr | L | T | P | TH | PH | CWS | PRS | MTE | ETE | PRE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. | ME262 | Machine Design | AEC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | |
| 2. | PE202 | Thermal Engineering-II | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | |
| 3. | PE204 | Industrial Engineering & Operation Research | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | |
| 4. | PE206 | Fluid Mechanics & Machinery | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | |
| 5. | PE208 | Metal Cutting &Tool Design | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | |
| 6. | HU202 | Engineering Economics | HMC | 3 | 3 | 0 | 0 | 3 | 0 | 25 | | 25 | 50 | |
| | | **Total** | | **23** | | | | | | | | | | |

## III Year: Fifth Semester

| S. No. | Code | Title | Area | Cr | L | T | P | TH | PH | CWS | PRS | MTE | ETE | PRE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. | PE301 | Casting Technology | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | |
| 2. | PE303 | Production Planning& Control | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | |
| 3. | PE3xx | Departmental Elective Course -1 | DEC/ GEC | 4 | 3 | 0/1 | 2/0 | 3 | 0 | 15/ 25 | 15/- | 30 /25 | 40/ 50 | |
| 4. | PE3xx | Departmental Elective Course -2 | DEC/ GEC | 4 | 3 | 0/1 | 2/0 | 3 | 0 | 15/ 25 | 15/- | 30 /25 | 40/ 50 | |
| 5. | UExxx | Open Elective Course | OEC | 3 | 3 | 0 | 0 | 3 | 0 | 25 | | 25 | 50 | |
| 6. | HU301 | Technical Communication | HMC | 2 | 0 | 0 | 3 | 3 | 0 | 25 | | 25 | 50 | |
| | | **Total** | | **21** | | | | | | | | | | |

## III Year: Sixth Semester

| S. No. | Code | Title | Area | Cr | L | T | P | TH | PH | CWS | PRS | MTE | ETE | PRE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. | PE302 | Welding Technology | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | |
| 2. | PE304 | Precision Manufacturing | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | |
| 3. | PE306 | Metrology & Quality Assurance | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | |
| 4. | PE3xx | Departmental Elective Course -3 | DEC/ GEC | 4 | 3 | 0/1 | 2/0 | 3 | 0 | 15/ 25 | 15/- | 30/ 25 | 40/ 50 | |
| 5. | PE3xx | Department Elective Course -4 | DEC/ GEC | 4 | 3 | 0/1 | 2/0 | 3 | 0 | 15/ 25 | 15/- | 30/ 25 | 40/ 50 | |
| 6. | HU304 | Professional Ethics & Human | HMC | 2 | 2 | 0 | 0 | 3 | 0 | | | | | |
| | | **Total** | | **22** | | | | | | | | | | |

## IV Year: Seventh Semester

| S. No. | Code | Title | Area | Cr | L | T | P | TH | PH | CWS | PRS | MTE | ETE | PRE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. | PE401 | B. Tech Project-I | DCC | 4 | | | | | | | | | | |
| 2. | PE403 | Training Seminar | DCC | 2 | | | | | | | | | | |
| 3. | PE405 | Metal Forming & Press Working | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | |
| 4. | PE407 | Quantitative Techniques | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | |
| 5. | PE4xx | Department Elective Course-5 | DEC/ GEC | 4 | 3 | 0/1 | 2/0 | 3 | 0 | 15/ 25 | 15/- | 30 /25 | 40/ 50 | |
| 6. | PE4xx | Department Elective Course-6 | DEC/ GEC | 4 | 3 | 0/1 | 2/0 | 3 | 0 | 15/ 25 | 15/- | 30 /25 | 40/ 50 | |
| | | **Total** | | **22** | | | | | | | | | | |

## IV Year: Eighth Semester

| S. No. | Code | Title | Area | Cr | L | T | P | TH | PH | CWS | PRS | MTE | ETE | PRE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. | PE402 | B. Tech Project-II | DCC | 8 | | | | | | | | | | |
| 2. | PE404 | Total Quality Management | DCC | 4 | 3 | 0 | 2 | 3 | | 15 | 15 | 30 | 40 | |
| 3. | PE4xx | Departmental Elective Course -7 | DEC/ GEC | 4 | 3 | 0/1 | 2/0 | 3 | 0 | 15/ 25 | 15/- | 30 /25 | 40/ 50 | |
| 4. | PE4xx | Departmental Elective Course -8 | DEC/ GEC | 4 | 3 | 0/1 | 2/0 | 3 | 0 | 15/ 25 | 15/- | 30 /25 | 40/ 50 | |
| | | **Total** | | **20** | | | | | | | | | | |

## List of Departmental Electives Courses

| S.No. | Subject Code | Subject | Elective No. |
|---|---|---|---|
| 1. | PE-305 | Advance Machine Design | DEC-1 and DEC-2 |
| 2. | PE-307 | Finite Element Method | |
| 3. | PE-309 | Rapid Prototyping Tooling & Manufacturing | |
| 4. | PE-311 | Sustainable Manufacturing | |
| 5. | PE-313 | Design Innovation & Manufacturing | |
| 6. | PE-315 | Mechatronics | |
| 7. | PE-308 | Green Energy Technology | DEC-3 and DEC-4 |
| 8. | PE-310 | Industrial Automation | |
| 9. | PE-312 | Automobile Engg | |
| 10. | PE-314 | Manufacturing of Composite Materials | |
| 11. | PE-316 | Advances in Welding | |
| 12. | PE-318 | Advances in Casting | |
| 13. | PE-409 | CNC Machine & Programming | DEC-5 and DEC-6 |
| 14. | PE-411 | Computer Integrated Design and Manufacturing | |
| 15. | PE-413 | Robotics and Automation | |
| 16. | PE-415 | Financial Management | |
| 17. | PE-417 | Materials Management | |
| 18. | PE-419 | Project Management | |
| 19. | PE-421 | Reliability, Maintenance & Safety Engineering | |
| 20. | PE-423 | Thermal Spray Technology | |
| 21. | PE-406 | Manufacturing & Applications of Polymer Composites | DEC-7 and DEC-8 |
| 22. | PE-408 | Industrial Tribology | |
| 23. | PE-410 | Packaging Technology | |
| 24. | PE-412 | Supply Chain Management & Value Engineering | |
| 25. | PE-414 | Flexible Manufacturing System | |
| 26. | PE-416 | Work Study & Ergonomic | |
| 27. | PE-418 | Advance Manufacturing Processes | |

## LIST OF OPEN ELECTIVES

| S.No. | SUBJECT CODE | SUBJECTS |
|---|---|---|
| 1. | CO351 | Enterprise & Java Programming |
| 2. | CO353 | E-commerce & ERP |
| 3. | CO355 | Cryptography & Information Security |
| 4. | CO357 | Operating System |
| 5. | CO359 | Intellectual Property Rights & Cyber Laws |
| 6. | CO361 | Database Management System |
| 7. | EC351 | Mechatronics |
| 8. | EC353 | Computer Vision |
| 9. | EC355 | Embedded System |
| 10. | EC 357 | Digital Image Processing |
| 11. | EC359 | VLSI Design |
| 12. | EE351 | Power Electronics Systems |
| 13. | EE353 | Electrical Machines and Power Systems |
| 14. | EE355 | Instrumentation Systems |
| 15. | EE357 | Utilization of Electrical Energy |
| 16. | EE359 | Non-conventional Energy Systems |
| 17. | EE361 | Embedded Systems |
| 18. | EN351 | Environmental Pollution & E- Waste Management |
| 19. | EN353 | Occupational Health & Safety Management |
| 20. | EN355 | GIS & Remote Sensing |
| 21. | EP351 | Physics of Engineering Materials |
| 22. | EP353 | Nuclear Security |
| 23. | HU351 | Econometrics |
| 24. | MA351 | History Culture & Excitement of Mathematics |
| 25. | ME351 | Power Plant Engineering |
| 26. | ME353 | Renewable Sources of Energy |
| 27. | ME355 | Combustion Generated Pollution |
| 28. | ME357 | Thermal System |

| S.No. | SUBJECT CODE | SUBJECTS |
|---|---|---|
| 29. | ME359 | Refrigeration & Air Conditioning |
| 30. | ME361 | Industrial Engineering |
| 31. | ME363 | Product Design & Simulation |
| 32. | ME365 | Computational fluid dynamics |
| 33. | ME367 | Finite Element Methods |
| 34. | ME369 | Total Life Cycle Management |
| 35. | ME371 | Value Engineering |
| 36. | MG351 | Fundamentals of Financial Accounting and Analysis |
| 37. | MG353 | Fundamentals of Marketing |
| 38. | MG355 | Human Resource Management |
| 39. | MG357 | Knowledge and Technology Management |
| 40. | PE351 | Advance Machining Process |
| 41. | PE 353 | Supply Chain Management |
| 42. | PE355 | Work Study Design |
| 43. | PE357 | Product Design & Simulation |
| 44. | PE359 | Total Life Cycle Management |
| 45. | PE361 | Total Quality Management |
| 46. | PT361 | High Performance Polymers |
| 47. | PT363 | Separation Technology |
| 48. | PT365 | Non-Conventional Energy |
| 49. | PT367 | Polymer Waste Management |
| 50. | PT369 | Nanotechnology in Polymers |
| 51. | PT371 | Applications of Polymer Blends and Composite |
| 52. | IT 351 | Artificial Intelligenceand Machine Learning |
| 53. | IT 353 | Data Structures and Algorithms |
| 54. | IT 355 | Communication and Computing Technology |
| 55. | IT 357 | Internet and Web Programming |
| 56. | IT 359 | Java Programming |

# SYLLABUS FIRST YEAR (2016-17)
# Common Courses for B. Tech. Programs

## Year: I Odd Semester

**Contact Hrs/Week**

| S. No. | Course Title | Subject Area | Credit | L | T | P | Total |
|---|---|---|---|---|---|---|---|
| Group A | | | | | | | |
| 1 | Mathematics – I | ASC | 4 | 3 | 1 | 0 | 4 |
| 2 | Physics – I | ASC | 4 | 3 | 0 | 2 | 5 |
| 3 | Chemistry | ASC | 4 | 3 | 0 | 2 | 5 |
| 4 | Basic Mechanical Engineering | AEC | 4 | 4 | 0 | 0 | 4 |
| 5 | Workshop Practice | AEC | 2 | 0 | 0 | 3 | 3 |
| 6 | Communication Skills | HMC | 3 | 3 | 0 | 0 | 3 |
| | **Total** | | **21** | **16** | **1** | **7** | **24** |
| **Group B** | | | | | | | |
| 1 | Mathematics - I | ASC | 4 | 3 | 1 | 0 | 4 |
| 2 | Physics – I | ASC | 4 | 3 | 0 | 2 | 5 |
| 3 | Basic Electrical Engineering | AEC | 4 | 3 | 0 | 2 | 5 |
| 4 | Programming Fundamentals | AEC | 4 | 3 | 0 | 2 | 5 |
| 5 | Engineering Graphics | AEC | 2 | 0 | 0 | 3 | 3 |
| 6 | Introduction to Environmental Science | AEC | 3 | 3 | 0 | 0 | 3 |
| | **Total** | | **21** | **16** | **1** | **9** | **26** |

## Year: I Even Semester

**Contact Hours/Week**

| S. No. | Course Title | Subject Area | Credit | L | T | P | Total |
|---|---|---|---|---|---|---|---|
| **Group A** | | | | | | | |
| 1 | Mathematics - II | ASC | 4 | 3 | 1 | 0 | 4 |
| 2 | Physics – II | ASC | 4 | 3 | 0 | 2 | 5 |
| 3 | Basic Electrical Engineering | AEC | 4 | 3 | 0 | 2 | 5 |

| S. No. | Course Title | Subject Area | Credit | L | T | P | Total |
|---|---|---|---|---|---|---|---|
| 4 | Programming Fundamentals | AEC | 4 | 3 | 0 | 2 | 5 |
| 5 | Engineering Graphics | AEC | 2 | 0 | 0 | 3 | 3 |
| 6 | Introduction to Environmental Science | AEC | 3 | 3 | 0 | 0 | 3 |
| | **Total** | | **21** | **16** | **1** | **7** | **26** |
| | | **Group B** | | | | | |
| 1 | Mathematics -I I | ASC | 4 | 3 | 1 | 0 | 4 |
| 2 | Physics – II | ASC | 4 | 3 | 0 | 2 | 5 |
| 3 | Chemistry | ASC | 4 | 3 | 0 | 2 | 5 |
| 4 | Basic Mechanical Engineering | AEC | 4 | 4 | 0 | 0 | 4 |
| 5 | Workshop Practice | AEC | 2 | 0 | 0 | 3 | 3 |
| 6 | Communication Skills | HMC | 3 | 3 | 0 | 0 | 3 |
| | **Total** | | **21** | **16** | **1** | **9** | **24** |

1. Subject Code: **ME 101/104** : Course Title: **Basic Mechanical Engineering**
2. Contact Hours : L: 04,T:00, P: 00
3. Examination Duration (Hrs.) : Theory: 3, Practical: 00
4. Relative Weight : CWS: 25, PRS: 00, MTE: 25, ETE: 50, PRE: 00
5. Credits : 04
6. Semester : First/Second
7. Subject Area : AEC
8. Pre-requisite : NIL
9. Objective : To familiarize the students with the concepts of thermodynamics, fluid mechanics, power plants, engineeringmaterials, manufacturing processes and metrology.

10. Details of Course :

| S. No. | Contents | Contact Hours |
|---|---|---|
| | **PART A** | |
| 1 | **Introduction:** Introduction to Thermodynamics, Concepts of systems, control volume, state, properties, equilibrium, quasi-static process, reversible & irreversible process, cyclic process. Zeroth Law and Temperature, Ideal Gas. Heat and Work. | 05 |
| 2 | First Law of Thermodynamics for closed & open systems. Non Flow Energy Equation. Steady State, Steady Flow Energy Equation. Second Law of Thermodynamics-Kelvin and Plank's Statements, Clausius inequality, Definition of Heat Engines, Heat pumps, Refrigerators. Concept of Energy and availability. Carnot Cycle; Carnot efficiency, Otto, Diesel, Dual cycle and their efficiencies. | 12 |
| 3 | Principles of power production, basic introduction about thermal power plant, hydroelectric power plant and nuclear power plant. | 04 |
| 4 | Properties & Classification of Fluids, Ideal & real fluids, Newton's law of viscosity, Pressure at a point, Pascal's law, Pressure variation in a static fluid, General description of fluid motion, stream lines, continuity equation, Bernoulli's equation, Steady and unsteady flow. | 07 |
| | **PART B** | |
| 5 | Introduction to engineering materials for mechanical construction. Composition, mechanical and fabricating characteristics and applications of various types of cast irons, plain carbon and alloy steels, copper, aluminum and their alloys like duralumin, brasses and bronzes cutting tool materials, super alloys thermoplastics, thermosets and composite materials. | 12 |
| 6 | Introduction to Manufacturing processes for various machine elements. Introduction to Casting & Welding processes. Sheet metal and its operations. Introduction to machining processes – turning, milling, shaping, drilling and boring operations. Fabrication of large and small assembles – examples nuts and bolts, turbine rotors etc. | 12 |
| 7 | Introduction to quality measurement for manufacturing processes; standards of measurements, line standards, end standards, precision measuring instruments and gauges: vernier calliper, height gauges, micrometer, comparators, dial indicator, and limit gauges. | 04 |
| **Total** | | **56** |

11. Suggested Books:

| S. No. | Name of Authors /Books / Publishers | Year of Publication/ Reprint |
|---|---|---|
| | **TEXT BOOKS:** | |
| 1 | Engineering Thermodynamics, P. K. Nag, Tata McGrawa-Hill | 2005 |
| 2 | Fundamentals of Classical Thermodynamics, G. J. Van Wylen and R. E. Santag. | 1994 |
| 3 | Manufacturing Processes, Kalpakjian | 2013 |
| 4. | Basic Mechanical Engineering,1/e, Pravin Kumar, Pearson Education, Delhi | 2013 |
| | **REFERENCE BOOKS:** | |
| 1 | Introduction to Fluid Mechanics and Fluid Machines, S. K. Som and G. Biswas | 2013 |
| 2 | Fluid Mechanics and Hydraulic Machines, R. K. Bansal | 2010 |
| 3 | Workshop Practices, K. Hazara Chowdhary | 2007 |
| 4 | Workshop Technology, W. A. J. Chapman | 1972 |
| 5 | Production Engineering, R. K. Jain, Khanna Publishers | 2001 |

1. Subject Code: **AC 101/102** : Course Title:**Chemistry**
2. Contact Hours : L: 03,T: 00, P: 02
3. Examination Duration (Hrs.) : Theory: 03, Practical: 00
4. Relative Weight : CWS: 15, PRS: 15, MTE: 30, ETE: 40, PRE: 00
5. Credits : 04
6. Semester : First / Second
7. Subject Area : ASC
8. Pre-requisite : NIL

9. Objective : To familiarize the students with the concepts of Engineering Chemistry, Material characterization and greenChemistry.

10. Details of Course :

| S. No. | Contents | Contact Hours |
|---|---|---|
| 1. | **Conventional Analysis**: Volumetric Analysis, Types of Titrations, Theory of Indicators. | 06 |
| 2. | **Spectral Methods of Analysis**: UV-visible, IR, NMR & MS: Principles and Applications. | 08 |
| 3. | **Thermal Methods of Analysis**: Thermo-gravimetry, Differential thermal analysis and Differential Scanning Calorimetry: Principles and Applications. | 04 |
| 4. | **Polymers & Plastics**: Functionality and Degree of Polymerization, Mechanism of Polymerization, Molecular Weights of Polymers, Methods of polymerization, Functional Polymers, Industrial applications of Polymers. | 06 |
| 5. | **Electrochemistry**: Electrochemical cells, components, characteristics of batteries. Primary and Secondary battery systems, Zinc-Carbon cells, Lead storage and lithium batteries. Fuel Cells, Electro-deposition, Electrical and chemical requirements. Electroplating bath and linings. Agitation, Circulation and filtration equipment. | 08 |
| 6. | **Phase Equilibrium**: Definitions of Phase, component and degree of freedom, Gibb's phase rule. One component systems: Water and sulphur. Two component systems: Pb-Ag and Cu-Ni. | 06 |
| 7. | **Green Chemistry**: Principles of Green Chemistry, Examples of Green Methods of Synthesis, Reagents and Reactions, Evaluation of feedstocks, Future trends in Green Chemistry. | 04 |
| | **Total** | **42** |

11. Suggested Books:

| S. No. | Name of Books/Authors/Publisher | Year of Publication/Reprint |
|---|---|---|
| 1 | Introduction to Thermal Analysis/Michael E. Brown/ Springer Netherlands | 2001 |
| 2 | Vogel's Quantitative Chemical Analysis/**J. Mendham, R.C. Denney, J. D. Barnes, M.J.K. Thomas /** Prentice Hall/6 edition | 2000 |
| 3 | Green Chemistry: Theory & Practice/P.T. Anastas & J.C. Warner/Oxford Univ Press | 2000 |
| 4 | Polymer Science and Technology/ Fried Joel R./ PHI; 2 edition | 2005 |
| 5 | Electrochemistry/ Philip H. Rieger / Springer | 2009 |

1. Subject Code: **AP 101** : Course Title:**Physics – I**
2. Contact Hours : L: 03,T: 00, P: 02
3. Examination Duration (Hrs.) : Theory:03, Practical: 00
4. Relative Weight : CWS: 15, PRS: 15, MTE: 30, ETE: 40, PRE: 00
5. Credits : 04
6. Semester : First
7. Subject Area : ASC
8. Pre-requisite : NIL
9. Objective :

10. Details of Course :

| S. No. | Contents | Contact Hours |
|---|---|---|
| 1. | **RELATIVITY**: Review of concepts of frames of reference and Galilean transformation equation, Michelson – Morley experiment and its implications, Einstein's special theory of relativity, Lorentz transformation equations, Law of addition of velocities, Mass variation with velocity, Concept of energy and momentum, Mass energy relation. | 08 |
| 2. | **OSCILLATIONS & WAVES:** Damped and forced oscillations, Resonance (amplitude and power), Q – factor, Sharpness of resonance. Equations of longitudinal and transverse waves and their solutions, Impedance, Reflection and transmission of waves at a boundary, Impedance matching between two medium. | 07 |
| 3. | **PHYSICAL OPTICS:** Interference by division of wave front and amplitude, Multiple beam interference and Fabry-Perot interferometer, Fresnel diffraction through a straight edge, Zone plate, Fraunhoffer diffraction, single slit and N-slit / grating, Resolving power of telescope, prism and grating. Polarization by reflection and by transmission, Brewster's law, Double refraction, elliptically and circularly polarized light, Nicol prism, Quarter and half wave plates. | 12 |
| 4. | **OPTICAL INSTRUMENTS:** Cardinal points of co-axial lens systems, spherical and chromatic aberrations and their removal, Huygens and Ramsden's eyepiece. | 05 |
| 5. | **LASERS:** Coherence and coherent properties of laser beams, Brief working principle of lasers, Spontaneous and stimulated Emission, Einstein's co-efficient, Ruby laser, He-Ne laser. | 06 |
| 6. | **OPTICAL FIBER:** Classification of optical fibers, Refractive index profile, Corecl adding refractive index difference, Numerical aperture of optical fiber, Pulse dispersion in optical fiber (ray theory). | 04 |
| | **Total** | **42** |

11. Suggested Books:

| S. No. | Name of Books/Authors | Year of Publication/ Reprint |
|---|---|---|
| 1. | Physics of Vibrations and Waves, by H.J. Pain. | 2005/ John Wiley & Sons Ltd |
| 2. | Vibrations and Waves, by A.P. French. | 1971/CRC Press |
| 3. | Perspective of Modern Physics, by Arthur Beiser | 1981/ McGraw-Hill |
| 4. | Optics, by A. Ghatak. | 2006/Tata McGraw-Hill |
| 5. | Berkley Physics Course Vol – 1. | 2009/ Tata McGraw-Hill |

1. Subject Code: **AP 102** : Course Title:**Applied Physics-II**
2. Contact Hours : L: 03,T: 00, P: 02
3. Examination Duration (Hrs.) : Theory: 03, Practical: 00
4. Relative Weight : CWS: 15, PRS: 15, MTE: 30, ETE: 40, PRE: 00
5. Credits : 04
6. Semester : First / Second
7. Subject Area : ASC
8. Pre-requisite : NIL
9. Objective :

10. Details of Course :

**Year: I (Semester: II)**

| S. No. | Contents | Contact Hours |
|---|---|---|
| 1. | **Quantum Physics :** Failure of classical physics, Compton effect, Pair production, de-broglie relation, wave function, Probability density, Schrodinger wave equation, operators, expectation values and eigen-value equation, particle in a box, simple harmonic oscillator problem, concept of degeneracy. | 10 |
| 2. | **Classical Statistics:** Microscopic-macroscopic systems, concept of phase space, basic postulates of statistical mechanics, Maxwell—Boltzmann distribution law. | 05 |
| 3. | **Quantum Statistics:** Fermi—Dirac and Bose–Einstein Distribution, Fermi-Dirac probability function, Fermi energy level. | 05 |
| 4. | **Nuclear Physics:** Nuclear properties, constituent of the nucleus, binding energy, stable nuclei, radioactive decay law (alpha and beta spectrum), Q-value of nuclear reaction , nuclear models: liquid drop and shell model, nuclear fission and fusion, elementary ideas of nuclear reactors. | 06 |
| 5. | **Electrodynamics:** Maxwell's equations, concept of displacement current, Derivation of wave equation for plane electromagnetic wave, Poynting vector. Poynting theorem, Energy density, wave equation in dielectric & conducting media. | 09 |
| 6 | **Semiconductor Physics:** Concept of intrinsic and extrinsic semiconductors, Fermi level, characteristics of PN Junction, static and dynamic resistance, zenar diode and LED, diode as a rectifier, transistor (PNP and NPN) characteristics, current and voltage gain. | 07 |
| | **Total** | **42** |

11. Suggested Books:

| S.No. | Name of Books/Authors | Year of Publication/ Reprint |
|---|---|---|
| 1. | Nuclear Physics,<br>by Erwin Kaplan | 2002/Narosa |
| 2. | Concept of Nuclear Physics,<br>by Bernard Cohen | 2001/ McGraw-Hill |
| 3. | Perspective of Modern Physics,<br>by Arthur Beiser | 1969/ McGraw-Hill US |
| 4. | Electrodynamics,<br>by Griffith | 2012/PHI Learning |
| 5. | Electricity & magnetism,<br>by Rangawala& Mahajan. | 2012/ McGraw-Hill |

1. Subject Code: **EE-101/102** : Course Title:**Basic Electrical Engineering**
2. Contact Hours : L: 03,T: 00, P: 02
3. Examination Duration (Hrs.) : Theory: 03, Practical: 03
4. Relative Weight : CWS: 15, PRS: 15, MTE: 30, ETE: 40, PRE: 00
5. Credits : 04
6. Semester : First / Second
7. Subject Area : AEC
8. Pre-requisite : NIL
9. Objective : To familiarize the students with the concepts of electrical circuits, magnetic circuits, transformer and measuring instruments.

10. Details of Course :

| S. No. | Contents | Contact Hours |
|---|---|---|
| 1 | **Introduction:** Role and importance of circuits in Engineering, concept of fields, charge, current, voltage, energy and their interrelationships. V- I characteristics of ideal voltage and ideal current sources, various types of controlled sources, passive circuit components, V-I characteristics and ratings of different types of R, L, C elements. DC Network: Series and parallel circuits, power and energy, Kirchhoff's Laws, delta-star transformation, superposition theorem, Thevenin's theorem, Norton's theorem, maximum power transfer theorem, Tellgen's theorem. | 10 |
| 2 | **Single Phase AC Circuits:** Single phase emf generation, average and effective values of sinusoids, complex representation of impedance, series and parallel circuits, concept of phasor, phasor diagram, power factor, complex power, real power, reactive power and apparent power, resonance in series and parallel circuits, Q-factor, bandwidth and their relationship, half power points. | 10 |
| 3 | **Three-Phase AC Circuits:** Three phase emf generation, delta and star connection, line and phase quantities, solution of three phase circuits: balanced supply and balanced load, phasor diagram, three phase power measurement by two wattmeter method. | 05 |
| 4 | **Magnetic Circuits and Transformers:** Amperes circuital law, B-H curve, concept of reluctance, flux and mmf, analogies between electrical and magnetic quantities, solution of magnetic circuits, hysteresis and eddy current losses, mutual inductance and dot convention, single phase transformer – construction and principle of working, auto transformer and their applications. | 12 |
| 5 | **Measuring Instruments:** Analog indicating instruments, PMMC ammeters and voltmeters, damping in indicating instruments, shunt and multipliers, moving iron ammeter and voltmeters, dynamometer type instruments, multimeters, AC watt-hour meters. digital voltmeters, ammeters and watt meters. | 05 |
| | **Total** | **42** |

11. Suggested Books :

| S. No. | Name of Authors /Books / Publishers | Year of Publication/Reprint |
|---|---|---|
| 1 | Basic Electrical Engineering, A. E. Fitzgerald, David Higginbotham, Arvin Grabel, **Tata McGraw-Hill Publishing Company; 5th Edition.** | 2009 |
| 2 | **Electrical and Electronic Technology,** Edward Hughes, Ian Mckenzie Smith, John Hiley, **Pearson Education, 10th edition.** | 2010 |
| 3 | **Linear Circuit Analysis: Time, Domain, Phasor and Laplace Transform Approaches** Raymond A. De Carlo, Pen-Min Lin, **Oxford University Press, 2nd Edition.** | 2001 |
| 4 | Hayt, Kemmerly & Durbin, "Engineering Circuit Analysis", Tata McGraw Hill Publishing Company Ltd. | 2007 |
| 5 | Electrical Engineering Fundamental V. Del Toro, Prentice-Hall, 2nd Edition. | 1989 |
| 6 | Basic Electrical Engineering, C.L. Wadhwa,**New Age International Pvt Ltd Publishers** | 2007 |
| 7 | Introduction to Electrical Engineering, Mulukutla S. Sarma, Oxford University Press Inc. | 2001 |

1. Subject Code: **ME-102/105** : Course Title:**Engineering Graphics**
2. Contact Hours : L: 00,T: 00, P: 03
3. Examination Duration (Hrs.) : Theory: 0, Practical: 03
4. Relative Weight : CWS: 00, PRS: 50, MTE: 00, ETE: 00, PRE: 50
5. Credits : 02
6. Semester : First / Second
7. Subject Area : AEC
8. Pre-requisite : NIL
9. Objective : To familiarize the students with drafting and engineering drawing practices.

10. Details of Course :

| S. No. | Contents | Contact Hours |
|---|---|---|
| | **PART A** | |
| 1 | **General:** Importance, Significance and scope of engineering drawing Lettering,Dimensioning, Scales, Sense of Proportioning, Different types of Projections, B.I.S. Specification, line symbols, rules of printing. | 03 |
| 2 | **Projections of Points and Lines:** Introduction of planes of projection, Reference and auxiliaryplanes, projections of points and lines in different quadrants, traces, inclinations, and true lengths of the lines, projections on auxiliary planes, shortest distance, intersecting and non-intersecting lines. | 03 |
| 3 | **Planes Other than the Reference Planes:** Introduction of other planes (perpendicular andoblique), their traces, inclinations etc., projections of points lines in the planes, conversion of oblique plane into auxiliary plane and solution of related problems. | 03 |
| 4 | **Projections of Plane Figures:** Different cases of plane figure (of different shapes) makingdifferent angles with one or both reference planes and lines lying in the plane figures making different given angles (with one or both reference planes). Obtaining true shape of the plane figure by projection. | 03 |
| 5 | **Projection of Solids:** Simple cases when solid is placed in different positions, Axis, faces andlines lying in the faces of the solid making given angles. | 03 |
| 6 | **Isometric and Orthographic Views:** First and Third angle of system of projection, sketching ofOrthographic views from pictorial views and vice –versa, Sectional views. | 09 |
| 7 | Principles of dimensioning. | 03 |
| 8 | Development of lateral surfaces of simple solids. | 06 |
| 9 | Introduction to available drafting softwares like AutoCAD | 09 |
| | **Total** | 42 |

11. Suggested Books:

| S. No. | Name of Authors /Books / Publishers | Year of Publication/ Reprint |
|---|---|---|
| | **TEXT BOOKS:** | |
| 1 | Engineering Graphics, Narayana, K.L. and Kannaiah, P, Tata McGraw Hill | 2005 |
| | **REFERENCE BOOKS:** | |
| 1 | Engineering Graphics, Naveen Kumar and S C Sharma | 2013 |
| 2 | Engineering Graphics, Chandra, A.M. and Chandra Satish, CRC Press | 2003 |

1. Subject Code: **EN-101/102** : Course Title:**Environmental Science**
2. Contact Hours : L: 03,T: 00, P: 00
3. Examination Duration (Hrs.) : Theory: 3 Hrs., Practical: ___
4. Relative Weight : CWS: 25, PRS: 00, MTE: 25, ETE: 50, PRE: 00
5. Credits : 03
6. Semester : First / Second
7. Subject Area : AEC
8. Pre-requisite : NIL
9. Objective : To introduce basic fundamentals of Environmental Science.

10. Details of Course :

| S. No. | Contents | Contact Hours |
|---|---|---|
| 1. | **Introduction to Environment:** Definition, Scope, and importance of environmental studies; need for public awareness; Segments of environment-lithosphere, hydrosphere, atmosphere, and biosphere; Environmental degradation; Role of individual in environmental conservation; sustainable lifestyle. | 06 |
| 2. | **Natural Resources:** Forest Resources : Deforestation, mining, dams and their effects on forest and tribal people; Water resources: over-utilization, floods, drought, conflicts over water, dams-benefits and problems; Mineral resources: Use and exploitation, environmental effects; Food resources : World food problems, changes caused by modern agriculture, fertilizer-pesticide problems, water logging, salinity**;** Energy resources : Growing energy needs, renewable and non renewable energy sources; Land resources : Land as a resource, land degradation, man induced landslides, soil erosion and desertification. | 09 |
| 3. | **Ecosystems and Biodiversity:** Concept of an ecosystem, Structure and function, Energy flow, Ecological succession, ecological pyramids; Types, characteristic features, structure and function of the Forest, Grassland, Desert, and Aquatic ecosystems.<br>Concept of Biodiversity, definition and types, Bio-geographical classification of India; Value of biodiversity; Biodiversity at global, national and local levels; India as a mega-diversity nation; Hot-sports of biodiversity; Threats to biodiversity, Endangered and endemic species of India, Conservation of biodiversity. | 09 |
| 4. | **Environmental Pollution:** Definition, Cause, effects and control measures of: Air pollution, Water pollution, Soil pollution, Marine pollution, Noise pollution, Thermal pollution, Nuclear hazards Solid waste Management: Causes, effects and control measures of urban and industrial wastes, Role of an individual in prevention of pollution, Pollution case studies, Disaster management: floods, earthquake, cyclone and landslides. | 09 |
| 5. | **Social Issues and Environment:** Sustainable development, Urban problems related to energy, Water conservation, rain water harvesting, watershed management, Resettlement and rehabilitation of people; its problems and concerns. Environmental ethics: Issues and possible solutions. Climate change, global warming, acid rain, ozone layer depletion, nuclear accidents and holocaust. Wasteland reclamation, Consumerism and waste products, Environment Laws and Acts, Issues involved in enforcement of environmental legislation, Public awareness. Population growth, variation among nations, Family Welfare Programme. | 09 |
| | **Total** | **42** |

1. Subject Code: MA-101 : Course Title:Mathematics – I
2. Contact Hours : L: 03,T: 01, P: 00
3. Examination Duration (Hrs.) : Theory: 03 Hrs., Practical: ___
4. Relative Weight : CWS: 25, PRS: 00, MTE: 25, ETE: 50, PRE: 00
5. Credits : 04
6. Semester : First
7. Subject Area : ASC
8. Pre-requisite : NIL
9. Objective : To acquaint the students with the knowledge of series & sequence, single & multiple variable calculus, knowledge of vector calculus and their applications.
10. Details of Course :

| S. No. | Contents | Contact Hours |
|---|---|---|
| 1. | **Infinite series**: Tests for convergence of series (Comparison, Ratio, Root, Integral, Raabe's, logarithmic), Alternating series, Absolute convergence, Conditional convergence. | 06 |
| 2. | **Differential & Integral Calculus of single variable:** Taylor's & MaClaurin's expansion, Radius of curvature, Tracing of some standard curves, Applications of definite integral to Area, Arc length, Surface area and volume (in cartesian, parametric and polar co-ordinates). | 07 |
| 3. | **Calculus of several variables**: Partial differentiation, Euler's theorem, Total differential, Taylor's theorem, Maxima-Minima, Lagrange's method of multipliers, Application in estimation of error and approximation. | 07 |
| 4. | **Multiple Integrals**: Double integral (Cartesian and polar co-ordinates), Change of order of integration,Triple integrals (Cartesian, cylindrical and spherical co-ordinates), Beta and Gamma functions, Applications of multiple integration in area and volume. | 08 |
| 5. | **Vector Differential Calculus**: Continuity and differentiability of vector functions, Scalar and Vector point function, Gradient, Directional Derivative, Divergence, Curl and their applications. | 07 |
| 6. | **Vector Integral Calculus**: Line integral, Surface integral and Volume integral, Applications to work done by the force, Applications of Green's, Stoke's and Gauss divergence theorems. | 07 |
| | **Total** | **42** |

11. Suggested Books:

| S. No. | Name of Books/Authors Publishers | Year of Publication/Reprint |
|---|---|---|
| 1. | Advanced engineering mathematics: Kreyszig; Wiley-India. 9th Edition ISBN : 978-81-265-3135-6 | 2011 |
| 2. | Advanced engineering mathematics: Jain/Iyenger; Narosa. 2nd Edition. ISBN: 81-7319-541-2 | 2003 |
| 3. | Advanced engineering mathematics: Taneja; I K international ISBN: 978-93-82332-64-0 | 2014 |
| 4. | Advanced engineering mathematics: Alan Jeffery; Academic Press ISBN: 978-93-80501-50-5 | 2010 |
| 5. | Calculus and analytic geometry: Thomas/Finney; Narosa. ISBN : 978-81-85015-52-1 | 2013 |

1. Subject Code: **MA-102** : Course Title:**Mathematics – II**
2. Contact Hours : L: 03,T: 01, P: 00
3. Examination Duration (Hrs.) : Theory: 3 Hrs., Practical: ___
4. Relative Weight : CWS: 25, PRS: 00, MTE: 25, ETE: 50, PRE: 00
5. Credits : 04
6. Semester : Second
7. Subject Area : ASC
8. Pre-requisite : NIL
9. Objective : To impart knowledge of matrices and

applications closed form and series solutions of Differential equations, Laplace Transform, Fourier series, Fourier Transform & their applications.

10. Details of Course :

| S. No. | Contents | Contact Hours |
|---|---|---|
| 1. | **Matrices**: Rank of a matrix, Inverse of a matrix using elementary transformations, Consistency of linear system of equations, Eigen-values and Eigenvectors of a matrix, Cayley Hamilton theorem, Diagonalization of matrix. | 07 |
| 2. | **Ordinary differential equations:** Second & higher order linear differential equations with constant coefficients, General solution of homogenous and non-homogenous equations, Method of variation of parameters, Euler-Cauchy equation, Simultaneous linear equations, Applications to simple harmonic motion. | 08 |
| 3. | **Special Functions**: Power series method, Frobenious method, Legendre equation, Legendre polynomials, Bessel equation, Bessel functions of first kind, Orthogonal property. | 08 |
| 4. | **Laplace Transforms**: Basic properties, Laplace transform of derivatives and integrals, Inverse Laplace transform, Differentiation and Integration of Laplace transform, Convolution theorem, Unit step function, Periodic function, Applications of Laplace transform to initial and boundary value problems. | 08 |
| 5. | **Fourier series** : Fourier series, Fourier Series of functions of arbitrary period, Even and odd functions, half range series, Complex form of Fourier Series, Numerical Harmonic analysis. | 06 |
| 6. | **Fourier Transforms**: Fourier Transforms, Transforms of derivatives and integrals, Applications to boundary value problem in ordinary differential equations (simple cases only). | 05 |
| | **Total** | **42** |

11. Suggested Books:

| S. No. | Name of Books/Authors Publishers | Year of Publication/Reprint |
|---|---|---|
| 1. | Advanced engineering mathematics: Kreyszig; Wiley.<br>ISBN : 978-81-265-3135-6 | 2011 |
| 2. | Advanced engineering mathematics: Jain/Iyenger; Narosa.<br>ISBN: 81-7319-541-2 | 2003 |
| 3. | Advanced engineering mathematics: Taneja; I K international<br>ISBN: 978-93-82332-64-0 | 2014 |
| 4. | Advanced engineering mathematics: Alan Jeffery; Academic Press<br>ISBN: 978-93-80501-50-5 | 2010 |
| 5. | Advanced engineering mathematics: Peter V. O'Neil Cengage Learning.<br>ISBN : 978-81-315-0310-2 | 2007 |

1. Subject Code: **HU 101/102** : Course Title:**Communication Skills**
2. Contact Hours : L: 03,T: 00, P: 00
3. Examination Duration (Hrs.) : 03 Hrs.
4. Relative Weight : CWS: 25, PRS: 00, MTE: 25, ETE: 50, PRE: 00
5. Credits : 04
6. Semester : First / Second
7. Subject Area : HMC
8. Pre-requisite : NIL
9. Objective : To impart essential skills required for effective communication in English language.

10. Details of Course :

| Sl. No. | Contents | Contact Hours |
|---|---|---|
| 1 | **Communication**<br>A. Communication: Process, Features, Barriers<br>B. Language, Technology and Communication | 02 |
| 2 | **Unit II: Grammar and Usage**<br>A. Vocabulary-Words/Word Formation, Confusing Word Pairs<br>B. Sentence Construction, Sentence Types, Direct/Indirect Speech<br>C. Punctuation, Error Spotting, Idioms and Phrases | 06 |
| 3 | **Unit III: Oral Communication**<br>A. Phonetics of English, Vowels, Consonants, syllables, transcription of words and simple sentences using IPA: Speech Sounds and their articulation; phonemes, Syllable, Stress, Transcription of words and Simple Sentences<br>B. Language Lab Practice for Oral Communication: Project Presentations, Group Discussions, Debates, Interviews etc. | 12 |
| 4 | **Unit IV: Written Technical Communication**<br>A. Composition- Descriptive, Explanatory, Analytical and Argumentative<br>B. Writing Paragraphs ( Essay, Summary, Abstract)<br>C. Reading and Comprehension, Providing working mechanism of instruments, appliances, description of processes, their operations and descriptions; Drawing Inferences from graphs, charts, Diagrams etc. | 12 |
| 5 | **Unit V: Texts for Appreciation and Analysis**<br>A. Improve your Writing by V. N. Arora and Lakshmi Chandra (OUP)<br>B. Vijay Seshadri. *3 Sections* (2014) **or***Gestures: Poetry from SAARC Countries* Ed. K. Satchidanandan. Sahitya Akademi: New Delhi ISBN-81-260-0019-8<br>C. Ursula K. Leguin. *The Telling*, Harcourt Inc. 2000 **or**<br>*Animal Farm* by George Orwell (1945) ISBN: 9781502492791 **or**<br>*Frankenstein* by Mary Shelley (1818) Harper Collins India Ltd.: NOIDA ISBN: 9780007350964 | 10 |
| | **Total** | **42** |

Text Books:

| Sl.No. | Name of Books, Authors, Publishers | Year of Publication/ Reprint |
|---|---|---|
| 1. | *Improve your Writing* by V.N.Arora and Lakshmi Chandra OUP: Delhi ISBN 13: 978-0-19-809608-5 | 1981, 2013 ( Revised Edition) |
| 2. | *Technical Communication: Principles and Practice* by Meenakshi Raman and Sangeeta Sharma OUP: Delhi. ISBN-13: 9780-19-806529-6 | 2011, Reprinted in 2014 |
| 3. | *English Phonetics and Phonology: A Practical Course*. By Peter Roach. Cambridge: Cambridge University Press. (Fourth Edition) ISBN: 978-0-521-14921-1 | 2009, 2014 (Reprinted) |
| 4. | Vijay Seshadri. *3 Sections*, Harper Collins India Ltd.: India. ISBN: 9789351367734. **or** *Gestures: Poetry from SAARC Countries* Ed. K. Satchidanandan. Sahitya Akademi: New Delhi ISBN- 81-260-0019-8 | 2014<br>1996, Reprint 2007 |
| 5. | Ursula K. Leguin. *The Telling*, Harcourt Inc. 2000 **or** *Animal Farm* by George Orwell (1945) ISBN: 9781502492791 **or** *Frankenstein* by Mary Shelley (1818) Harper Collins India Ltd.: Noida ISBN: 9780007350964 | 2000<br>1945/ 2014 Reprint<br>1818/ Latest Reprint 2012 |

11. Suggested Books

| Sl. No. | Name of Books, Authors, Publishers | Year of Publication/Reprint |
|---|---|---|
| 1. | Maison, Margaret M. ***Examine Your English.***. Orient Blackswan: Delhi, | 2009 |
| 2. | Sharma, Sangeeta & Binod Sharma. ***Communication Skills for Engineers & Scientists***, PHI. | 2012 |
| 3. | Swan, Michael, Catherine Walter. ***Oxford English Grammar Course****. OUP: Delhi,* | 2011 |
| 4. | Kumar, E Suresh & P Sreehari ***A Handbook for English Language Laboratories***, 2nd Edition, Cambridge University Press,Foundation Books, | 2014 |
| 5. | Dutt, P Kiranmai, Geetha Rajeevan & CLN Prakash ***A Course in Communication Skills****. Cambridge University Press (*Foundation Books). | 2013 |
| | Mitra, Barun K. ***Personality Development and Soft Skills***. OUP: Delhi. | 2011 |
| | Apps for Phonetics- Advanced English Dictionary for Windows phone & OALD for Android phone | Latest |

| | | | |
|---|---|---|---|
| 1. | Subject Code: **CO 101/102** | : | Course Title: **Programming Fundamentals** |
| 2. | Contact Hours | : | L: 03,T: 00, P: 02 |
| 3. | Examination Duration (Hrs.) | : | Theory : 3 Hrs., Practical : 00 |
| 4. | Relative Weight | : | CWS: 15, PRS: 15, MTE: 30, ETE: 40, PRE: 00 |
| 5. | Credits | : | 04 |
| 6. | Semester | : | First / Second |
| 7. | Subject Area | : | AEC |
| 8. | Pre-requisite | : | NIL |
| 9. | Objective | : | To introduce fundamentals of Programming using C and C++, concepts of program development and object Oriented Programming. |

10. Details of Course :

| S. No. | Contents | Contact Hours |
|---|---|---|
| 1. | Introduction: Concepts of algorithm, flow chart, Introduction to different Programming Languages like C, C++, Java etc. Elementary Programming in C: Data types, assignment statements, Arithmetic, unary, logical, bit-wise, assignment and conditional operators, conditional statements and input/output statements. | 06 |
| 2. | Iterative programs using loops- While, do-while, for statements, nested loops, if else, switch, break, Continue, and goto statements, comma operators. Concept of subprograms. | 06 |
| 3. | Array representation, Operations on array elements, using arrays, multidimensional arrays. Structures & Unions: Declaration and usage of structures and Unions. Defining and operations on strings. | 06 |
| 4. | Pointers: Pointer and address arithmetic, pointer operations and declarations, using pointers as function argument.<br><br>File: Declaration of files, different types of files. File input/ output and usage-, File operation: creation, copy, delete, update, text file, binary file.. | 08 |
| 5. | Concept of macros and pre-processor commands in C, Storage types: Automatic, external, register and static variables.<br><br>Sorting and searching algorithms: selection sort, bubble sort, insertion sort, merge sort, quick sort and binary search. | 08 |
| 6. | Introduction to Object Oriented Programming: OOPS concepts: class, encapsulation, inheritance, polymorphism, overloading etc. C++ introduction, Concept of class, methods, constructors, destructors, inheritance. | 08 |
| | **Total** | **42** |

11. Suggested Books

| S. No. | Name of Books / Authors/ Publishers | Year of Publication/Reprint |
|---|---|---|
| 1. | The C Programming Language, 2nd Edition, Brian W. Kernighan, Dennis M. Ritchie, PHI, (ISBN-978-8120305960) | 1988 |
| 2. | •Let Us C, 13th Edition, YashavantKanetkar, BPB Publications, (ISBN: 978-8183331630) | 2013 |
| 3. | Mastering C, Venugopal K R, Sudeep R Prasad, Edition 1,McGraw Hill Education. (ISBN- 9780070616677) | 2006 |
| 4. | Programming in ANSI C , Sixth Edition, McGraw Hill Education (India) Private LimitedE Balagurusamy (ISBN: 978-1259004612) | 2012 |
| 5. | Object Oriented Programming with C++, Sixth edition , E. Balagurusamy, McGraw Hill Education (India) Private Limited (ISBN: 978-1259029936) | 2013 |

| | | | |
|---|---|---|---|
| 1. | Subject Code: **ME 103/106** | : | Course Title:**Workshop Practice** |
| 2. | Contact Hours | : | L: 00,T: 00, P: 03 |
| 3. | Examination Duration (Hrs.) | : | Theory : -- Hrs., Practical : 03 |
| 4. | Relative Weight | : | CWS: 00, PRS: 50, MTE: 00, ETE: 00, PRE: 50 |
| 5. | Credits | : | 02 |
| 6. | Semester | : | First / Second |
| 7. | Subject Area | : | AEC |
| 8. | Pre-requisite | : | NIL |
| 9. | Objective | : | To familiarize the students with manufacturing shops like Carpentry, Foundry, Welding, Machining,Fitting and Smithy. |

10. Details of Course :

| Sl. No. | Shop | Description | Contact Hours |
|---|---|---|---|
| 1. | Carpentry | Study of Different Carpentry Tools and Pattern Making of a given job (pulley/screw jack body) | 03 |
| 2. | Foundry | Study of Different Foundry Tools and Furnaces Making a green sand mould of a given pattern (pulley/screw jack body) and its casting | 06 |
| 3. | Welding | Arc welding of butt joint, T-joint and lap joint Study of other welding/ joining Techniques | 09 |
| 4. | Machining | Study of lathe, milling, drilling machine, shaper, planer and grinding machine. Demonstration of a job on lathe | 09 |
| 5. | Fitting | Study of various fitting hand tools, marking and measuring devices Preparation of a given job (box / funnel) | 09 |
| 6. | Smithy | Study of different forming tools and power press Preparation of a given job (bolt / chisel) | 06 |
| | | **Total** | **42** |

# SCHEME OF TEACHING AND EXAMINATION

## B. TECH. (EVENING)

**SYLLABUS FOR FIRST YEAR B. TECH. (EVENING)**
**DEPARTMENT OF CIVIL ENGINEERING**
**BACHELOR OF TECHNOLOGY (EVENING) CIVIL ENGINEERING**

## I Year

| First Semester | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Teaching Scheme | | | | | Contact Hours/ Week | | | Exam Duration (h) | | Relative Weights (%) | | | | | |
| S. No. | Subject Code | Course Title | Subject Area | Credit | L | T | P | Theory | Practical | CWS | PRS | MTE | ETE | PRE |
| 1 | CEC-105 | Basic Electronics & Instrumentation | AEC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 25 | 20 | 40 | - |
| 2 | CCE-101 | Civil Engineering Basics & Applications | DCC | 4 | 3 | 1 | 0 | 3 | 0 | 25 | 0 | 25 | 50 | - |
| 3 | CCE-103 | Engineering Analysis & Design | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 25 | 20 | 40 | - |
| 4 | CHU-101 | Communication Skills | HMC | 2 | 2 | 0 | 0 | 3 | 0 | 25 | 0 | 25 | 50 | - |
| | **Total** | | | **14** | **11** | **1** | **4** | | | | | | | |
| **Second Semester** | | | | | | | | | | | | | | | |
| 1 | CEN-102 | Environmental Engineering+-- | AEC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 25 | 20 | 40 | - |
| 2 | CCE-102 | Engineering Mechanics | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 25 | 20 | 40 | - |
| 3 | CCE-104 | Fluid Mechanics | DCC | 4 | 3 | 1 | 0 | 3 | 0 | 25 | 0 | 25 | 50 | - |
| 4 | CMG-102 | Fundamentals of Management | HMC | 3 | 3 | 0 | 0 | 3 | 0 | 25 | 0 | 25 | 50 | - |
| | **Total** | | | **15** | **12** | **1** | **4** | | | | | | | |

## II Year

| Third Semester | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Teaching Scheme | | | | | Contact Hours/ Week | | | Exam Duration (h) | | Relative Weights (%) | | | | |
| S. No. | Subject Code | Course Title | Subject Area | Credit | L | T | P | Theory | Practical | CWS | PRS | MTE | ETE | PRE |
| 1 | CCE-201 | Mechanics of Solids | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 25 | 20 | 40 | - |
| 2 | CCE-203 | Engineering Survey | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 25 | 20 | 40 | - |
| 3 | CCE-205 | Soil Mechanics | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 25 | 20 | 40 | - |
| 4 | CHU-201 | Professional Ethics and Human Values | HMC | 2 | 2 | 0 | 0 | 3 | 0 | 25 | 0 | 25 | 50 | - |
| | **Total** | | | **14** | 11 | 0 | 6 | | | | | | | |
| **Fourth Semester** | | | | | | | | | | | | | | |
| 1 | CCE-202 | Hydraulics & Hydraulic Machines | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 25 | 20 | 40 | - |
| 2 | CCE-204 | Analysis of Determinate Structures | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 25 | 20 | 40 | - |
| 3 | CCE-206 | Design of RCC Structures | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 25 | 20 | 40 | - |
| 4 | CHU-202 | Engineering Economics | HMC | 3 | 3 | 0 | 0 | 3 | 0 | 25 | 0 | 25 | 50 | - |
| | **Total** | | | **15** | 12 | 0 | 6 | | | | | | | |

## III Year

| Fifth Semester | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Teaching Scheme | | | | | Contact Hours/Week | | | Exam Duration (hrs.) | | Relative Weights (%) | | | | |
| S. No. | Subject Code | Course Title | Subject Area | Cr | L | T | P | Theory | Practical | CWS | PRS | MTE | ETE | PRE |
| 1 | CCE-301 | Analysis of Indeterminate Structures | DCC | 4 | 3 | 1 | 0 | 3 | 0 | 25 | - | 25 | 50 | - |
| 2 | CCE-303 | Geotechnical Engineering | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 3 | CCE-3xx | Departmental Elective-1 | DEC/ GEC | 4 | 3 | 0/1 | 2/0 | 3 | 0 | 15/ 25 | 15/0 | 30/ 25 | 40/ 50 | - |
| 4 | ---- | Open Elective | OEC | 3 | 3 | 0 | 0 | 3 | 0 | 25 | 0 | 25 | 50 | - |
| | **Total** | | | **15** | 12 | 1/0 | 4/6 | | | | | | | |
| **Sixth Semester** | | | | | | | | | | | | | | |
| 1 | CCE-302 | Transportation Engineering | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 2 | CCE-3xx | Department Elective -2 | DEC/ GEC | 4 | 3 | 0/1 | 2/0 | 3 | 0 | 15/ 25 | 15/0 | 30/ 25 | 40/ 50 | - |
| 3 | CCE-3xx | Department Elective -3 | DEC/ GEC | 4 | 3 | 0/1 | 2/0 | 3 | 0 | 15/ 25 | 15/0 | 30/ 25 | 40/ 50 | - |
| 4 | CCE-3xx | Department Elective -4 | DEC/ GEC | 4 | 3 | 0/1 | 2/0 | 3 | 0 | 15/ 25 | 15/0 | 30/ 25 | 40/ 50 | - |
| | **Total** | | | **16** | 12 | 2/0 | 2/6 | | | | | | | |

## IV Year

| Seventh Semester | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Teaching Scheme | | | | | Contact Hours/Week | | | Exam Duration (hrs.) | | Relative Weights (%) | | | | |
| S. No. | Subject Code | Course Title | Subject Area | Cr | L | T | P | Theory | Practical | CWS | PRS | MTE | ETE | PRE |
| 1 | CCE-401 | Design of Steel Structures | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 2 | CCE-403 | Water Resources Engineering | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 15 | 30 | 40 | - |
| 3 | CCE-4xx | Department Elective -5 | DEC | 4 | 3 | 0/1 | 2/0 | 3 | 0 | 15/25 | 15/0 | 30/25 | 40/50 | - |
| 4 | CCE-4xx | Department Elective -6 | DEC | 4 | 3 | 0/1 | 2/0 | 3 | 0 | 15/25 | 15/0 | 30/25 | 40/50 | - |
| 5 | CCE-405 | *B. Tech. Project | | 4 | | | | | | | | | | |
| | **Total** | | | **20** | 12 | 1/0 | 4/6 | | | | | | | |
| *To be done at their place of work | | | | | | | | | | | | | | |
| **Eighth Semester** | | | | | | | | | | | | | | |
| 1 | CCE-402 | Construction Technology & Management | DCC | 4 | 3 | 1 | 0 | 3 | 0 | 25 | - | 25 | 50 | - |
| 2 | CCE-4xx | Department Elective -7 | DEC/GEC | 4 | 3 | 0/1 | 2/0 | 3 | 0 | 15/25 | 15/0 | 30/25 | 40/50 | - |
| 3 | CCE-4xx | Department Elective -8 | DEC/GEC | 4 | 3 | 0/1 | 2/0 | 3 | 0 | 15/25 | 15/0 | 30/25 | 40/50 | - |
| 4 | CCE-406 | *B. Tech. Project (Continued from 7th Sem) | | 8 | | | | | | | | | | |
| | **Total** | | | **20** | 9 | 1/0 | 2/4 | | | | | | | |
| *To be done at their place of work | | | | | | | | | | | | | | |

# List of Departmental Elective Courses

| SN | Subject Code | Subject | Elective NO. |
|---|---|---|---|
| 1 | CCE305 | Mechanics of Materials | DEC-1 |
| 2 | CCE307 | Advanced geo-technical engineering | |
| 3 | CCE309 | Environmental Engineering Design | |
| 4 | CCE311 | Photogrammetry and astronomy | |
| 5 | CCE304 | Earthquake Technology | DEC-2 |
| 6 | CCE306 | Rock engineering | |
| 7 | CCE308 | Solid Waste Management & Air Pollution Control | |
| 8 | CCE310 | Application of geo-informatics remote sensing and GIS in engineering | |
| 9 | CCE312 | Disaster Management | DEC-3 |
| 10 | CCE314 | Geo-technical processes | |
| 11 | CCE316 | Water Power Systems & Design | |
| 12 | CCE318 | Tunnel, ports and harbor engineering | |
| 13 | CCE320 | Matrix methods of structural analysis | DEC-4 |
| 14 | CCE322 | Analysis & Design of Underground Structures | |
| 15 | CCE324 | Computational Hydraulics | |
| 16 | CCE326 | Traffic and transportation planning | |
| 17 | CCE405 | Advanced design of concrete structures | DEC-5 |
| 18 | CCE407 | Interaction behavior of soil structure | |
| 19 | CCE409 | Water Resources Management | |
| 20 | CCE411 | Transportation safety and environment | |
| 21 | CCE413 | Finite element method for 2-D structures | DEC-6 |
| 22 | CCE415 | Soil Dynamics | |
| 23 | CCE417 | Hydraulic structures and flood control works | |
| 24 | CCE419 | Advanced transportation engineering | |
| 25 | CCE404 | Advanced design of steel structures | DEC-7 |
| 26 | CCE406 | Computational Geo-mechanics | |
| 27 | CCE408 | Advanced Fluid Mechanics | |
| 28 | CCE410 | Construction and design aspects in transportation engineering | |
| 29 | CCE412 | Design of bridges | DEC-8 |
| 30 | CCE414 | Geo-environmental and geo-hazard engineering | |
| 31 | CCE416 | Ground water and seepage | |
| 32 | CCE418 | Traffic Engineering | |

# DEPARTMENT OF ELECTRICAL ENGINEERING

## BACHELOR OF TECHNOLOGY (EVENING) ELECTRICAL ENGINEERING

### I Year

| First Semester | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Teaching Scheme | | | | | Contact Hours/Week | | | Exam Duration (hrs.) | | Relative Weights (%) | | | | |
| S. No. | Subject Code | Course Title | Subject Area | Cr | L | T | P | Theory | Practical | CWS | PRS | MTE | ETE | PRE |
| 1 | CMA-101 | Engineering Mathematics | AEC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 25 | 20 | 40 | - |
| 2 | CEE-101 | Network Analysis & Synthesis | DCC | 4 | 3 | 1 | 0 | 3 | 0 | 25 | 0 | 25 | 50 | - |
| 3 | CEE-103 | Engineering Analysis & Design | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 25 | 20 | 40 | - |
| 4 | CHU-101 | Communication Skills | HMC | 2 | 2 | 0 | 0 | 3 | 0 | 25 | 0 | 25 | 50 | - |
| | **Total** | | | **14** | 11 | 1 | 4 | | | | | | | |
| **Second Semester** | | | | | | | | | | | | | | |
| 1 | CEC-102 | Electronic Devices and Circuits | AEC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 25 | 20 | 40 | - |
| 2 | CEE-102 | Electromechanical Energy Conversion and Transformer | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 25 | 20 | 40 | - |
| 3 | CEE-104 | Electromagnetic Field Theory | DCC | 4 | 3 | 1 | 0 | 3 | 0 | 25 | 0 | 25 | 50 | - |
| 4 | CMG-102 | Fundamentals of Management | HMC | 3 | 3 | 0 | 0 | 3 | 0 | 25 | 0 | 25 | 50 | - |
| | **Total** | | | **15** | 12 | 1 | 4 | | | | | | | |

## II Year

| Third Semester | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Teaching Scheme | | | | | Contact Hours/Week | | | Exam Duration (hrs.) | | Relative Weights (%) | | | | |
| S. No. | Subject Code | Course Title | Subject Area | Cr | L | T | P | Theory | Practical | CWS | PRS | MTE | ETE | PRE |
| 1 | CEE-201 | Digital Circuits and System | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 25 | 20 | 40 | - |
| 2 | CEE-203 | Control Systems | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 25 | 20 | 40 | - |
| 3 | CEE-205 | Asynchronous and Synchronous Machines | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 25 | 20 | 40 | - |
| 4 | CHU-201 | Professional Ethics and Human Values | HMC | 2 | 2 | 0 | 0 | 3 | 0 | 25 | 0 | 25 | 50 | - |
| | **Total** | | | **14** | 11 | 0 | 6 | | | | | | | |
| **Fourth Semester** | | | | | | | | | | | | | | |
| 1 | CEE-202 | Power Transmission and Distribution | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 25 | 20 | 40 | - |
| 2 | CEE-204 | Instrumentation and Measurement | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 25 | 20 | 40 | - |
| 3 | CEE-206 | Microprocessors and Microcontrollers Applications | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 25 | 20 | 40 | - |
| 4 | CHU-202 | Engineering Economics | HMC | 3 | 3 | 0 | 0 | 3 | 0 | 25 | 0 | 25 | 50 | - |
| | **Total** | | | **15** | 12 | 0 | 6 | | | | | | | |

## III Year

| Fifth Semester | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Teaching Scheme | | | | | Contact Hours/Week | | | Exam Duration (hrs.) | | Relative Weights (%) | | | | |
| S. No. | Subject Code | Course Title | Subject Area | Cr | L | T | P | Theory | Practical | CWS | PRS | MTE | ETE | PRE |
| 1 | CEE-301 | Power Electronics | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 25 | 20 | 40 | - |
| 2 | CEE-303 | Power Systems and Analysis | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 25 | 20 | 40 | - |
| 3 | CEE-3xx | Department Elective-1 | DEC/ GEC | 4 | 3 | 1/0 | 0/2 | 3 | 0 | 25/ 15 | 0/25 | 25/ 20 | 50/ 40 | - |
| 4 | -------- | OpenElective | OEC | 3 | 3 | 0 | 0 | 3 | 0 | 25 | 0 | 25 | 50 | - |
| | **Total** | | | **15** | 12 | 1/0 | 4/6 | | | | | | | |
| **Sixth Semester** | | | | | | | | | | | | | | |
| 1 | CEE-302 | Renewable Energy Systems | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 25 | 20 | 40 | - |
| 2 | CEE-3xx | Department Elective-2 | DEC/ GEC | 4 | 3 | 1/0 | 0/2 | 3 | 0 | 25/ 15 | 0/25 | 25/ 20 | 50/ 40 | - |
| 3 | CEE-3xx | Department Elective-3 | DEC/ GEC | 3 | 3 | 0 | 0 | 3 | 0 | 25 | 0 | 25 | 50 | - |
| 4 | CEE-3xx | Department Elective-4 | DEC/ GEC | 4 | 3 | 1/0 | 0/2 | 3 | 0 | 25/ 15 | 0/25 | 25/ 20 | 50/ 40 | - |
| | **Total** | | | **15** | 12 | 2/0 | 2/6 | | | | | | | |

## IV Year

| Seventh Semester | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Teaching Scheme | | | | | Contact Hours/Week | | | Exam Duration (hrs.) | | Relative Weights (%) | | | | |
| S. No. | Subject Code | Course Title | Subject Area | Cr | L | T | P | Theory | Practical | CWS | PRS | MTE | ETE | PRE |
| 1 | CEE-401 | Utilization of Electrical Energy | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 25 | 20 | 40 | - |
| 2 | CEE-403 | Electric Drives | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 25 | 20 | 40 | - |
| 3 | CEE-4xx | Department Elective-5 | DEC/ GEC | 3 | 3 | 0 | 0 | 3 | 0 | 25 | 0 | 25 | 50 | - |
| 4 | CEE-4xx | Department Elective-6 | DEC/ GEC | 4 | 3 | 1/0 | 0/2 | 3 | 0 | 25/ 15 | 0/ 25 | 25/ 20 | 50/ 40 | - |
| 5 | CEE-405 | *B. Tech. Project | | 4 | - | - | - | | | | | 40 | 60 | |
| | **Total** | | | **19** | 12 | 1/0 | 4/6 | | | | | | | |
| **Eighth Semester** | | | | | | | | | | | | | | |
| 1 | CEE-402 | Switchgear and Protection | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 25 | 20 | 40 | - |
| 2 | CEE-4xx | Department Elective-7 | DEC/ GEC | 4 | 3 | 1/0 | 0/2 | 3 | 0 | 25/ 15 | 0/ 25 | 25/ 20 | 50/ 40 | - |
| 3 | CEE-4xx | Department Elective-8 | DEC/ GEC | 3 | 3 | 0 | 0 | 3 | 0 | 25 | 0 | 25 | 50 | - |
| 4 | CEE-304 | *B. Tech Project (continued from 7th semester) | | 8 | - | - | - | | | | | 40 | 60 | |
| | **Total** | | | **19** | 9 | 1/0 | 2/4 | | | | | | | |

## List of Departmental Elective Courses

| S. No. | Elective Code | Title of Elective | Elective no. |
|---|---|---|---|
| 1. | CEE-305 | Signals and Systems | DEC 1 |
| 2. | CEE-307 | Power Station Practices | |
| 3. | CEE-309 | Special Electrical Machines | |
| 4. | CEE-311 | Energy Efficient Motors | |
| 5. | CEE-313 | Linear Integrated Circuits | |
| 6. | CEE-315 | Digital Control and State Variable Analysis | |
| 7. | CEE-304 | Power System Operation and Control | DEC 2, DEC-3 and DEC 4 |
| 8. | CEE-306 | Power System Optimization | |
| 9. | CEE-308 | Power Electronic Applications to Power Systems | |
| 10. | CEE-310 | Electrical Energy Storage Systems | |
| 11. | CEE-312 | Switched Mode Power Supplies | |
| 12. | CEE-314 | VLSI Design | |
| 13. | CEE-316 | Communication Systems | |
| 14. | CEE-318 | Data Communication and Computer Networks | |
| 15. | CEE-320 | Digital System Design | |
| 16. | CEE-322 | Design of Electrical Machines | |
| 17. | CEE-324 | Advanced Topics in Electrical Machines | |
| 18. | CEE-326 | DSP Applications to Electromechanical Systems | |
| 19. | CEE-328 | AI and Expert Systems | |

| S. No. | Elective Code | Title of Elective | Elective no. |
|---|---|---|---|
| 20. | CEE-405 | Design, Estimation & Costing of Industrial Electrical Systems | DEC-5 and DEC 6 |
| 21. | CEE-407 | Power System Modeling & Simulation | |
| 22. | CEE-409 | Solar Photovoltaic and Wind Energy Conversion | |
| 23. | CEE-411 | Power System Reliability | |
| 24. | CEE-413 | Pulse Width Modulation for Power converters | |
| 25. | CEE-415 | SCADA & Energy Management Systems | |
| 26. | CEE-417 | Advanced Analog Circuit Design | |
| 27. | CEE-419 | Computer Architecture | |
| 28. | CEE-421 | HVDC | |
| 29. | CEE-406 | Power System Dynamics & Stability | |
| 30. | CEE-406 | Distribution Systems Analysis & Control | DEC-7 and DEC 8 |
| 31. | CEE-408 | Restructured Power Systems | |
| 32. | CEE-410 | Power System Planning | |
| 33. | CEE-412 | High Voltage Engineering | |
| 34. | CEE-414 | Distributed Generation | |
| 35. | CEE-416 | Grid Integration of Renewable Energy Sources | |
| 36. | CEE-418 | Selected Topics in Power Electronics | |
| 37. | CEE-420 | Power Quality | |
| 38. | CEE-422 | Energy Auditing, Energy Efficiency and Conservation | |
| 39. | CEE-424 | Flexible AC Transmission Systems | |
| 40. | CEE-426 | Micro Grid and Smart Grid | |

# DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING

## BACHELOR OF TECHNOLOGY (EVENING)
## ELECTRONICS & COMMUNICATION ENGINEERING

### I Year

| First Semester | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Teaching Scheme | | | | | Contact Hours/Week | | | Exam Duration (hrs.) | | Relative Weights (%) | | | | |
| S. No. | Subject Code | Course Title | Subject Area | Cr | L | T | P | Theory | Practical | CWS | PRS | MTE | ETE | PRE |
| 1 | CEE-107 | Electronic Instrumentation and Measurements | AEC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 25 | 20 | 40 | - |
| 2 | CEC-101 | Analog Electronics – I | DCC | 4 | 3 | 1 | 0 | 3 | 0 | 25 | 0 | 25 | 50 | - |
| 3 | CEC-103 | Engineering Analysis & Design | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 25 | 20 | 40 | - |
| 4 | CHU-101 | Communication Skills | HMC | 2 | 2 | 0 | 0 | 3 | 0 | 25 | 0 | 25 | 50 | - |
| | **Total** | | | **14** | 11 | 1 | 4 | | | | | | | |
| **Second Semester** | | | | | | | | | | | | | | |
| 1 | CEE-106 | Electro-Magnetics | AEC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 25 | 20 | 40 | - |
| 2 | CEC-102 | Digital Design – I | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 25 | 20 | 40 | - |
| 3 | CEC-104 | Signals & Systems | DCC | 4 | 3 | 1 | 0 | 3 | 0 | 25 | 0 | 25 | 50 | - |
| 4 | CMG-102 | Principles of Management | HMC | 3 | 3 | 0 | 0 | 3 | 0 | 25 | 0 | 25 | 50 | - |
| | **Total** | | | **15** | 12 | 1 | 4 | | | | | | | |

## II Year

| Third Semester | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Teaching Scheme | | | | | Contact Hours/Week | | | Exam Duration (hrs.) | | Relative Weights (%) | | | | |
| S. No. | Subject Code | Course Title | Subject Area | Cr | L | T | P | Theory | Practical | CWS | PRS | MTE | ETE | PRE |
| 1 | CEC-201 | Analog Electronics – II | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 25 | 20 | 40 | - |
| 2 | CEC-203 | Digital Design – II | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 25 | 20 | 40 | - |
| 3 | CEC-205 | Communication Systems | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 25 | 20 | 40 | - |
| 4 | CHU-201 | Professional Ethics and Human Values | HMC | 2 | 2 | 0 | 0 | 3 | 0 | 25 | 0 | 25 | 50 | - |
| | **Total** | | | **14** | 11 | 0 | 6 | | | | | | | |
| **Fourth Semester** | | | | | | | | | | | | | | |
| 1 | CEC-202 | Digital Communication | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 25 | 20 | 40 | - |
| 2 | CEC-204 | Linear Integrated Circuits | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 25 | 20 | 40 | - |
| 3 | CEC-206 | VLSI Design | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 25 | 20 | 40 | - |
| 4 | CHU-202 | Engineering Economics | HMC | 3 | 3 | 0 | 0 | 3 | 0 | 25 | 0 | 25 | 50 | - |
| | **Total** | | | **15** | 12 | 0 | 6 | | | | | | | |

## III Year

| Fifth Semester | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Teaching Scheme | | | | | Contact Hours/Week | | | Exam Duration (hrs.) | | Relative Weights (%) | | | | |
| S. No. | Subject Code | Course Title | Subject Area | Cr | L | T | P | Theory | Practical | CWS | PRS | MTE | ETE | PRE |
| 1 | CEC-301 | Digital Signal Processing | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 25 | 20 | 40 | - |
| 2 | CEC-3XX | Departmental Elective-1 | DEC/GEC | 4 | 3 | 1/0 | 0/2 | 3 | 0 | 15/25 | 25/0 | 20/25 | 40/50 | - |
| 3 | CEC-3XX | Departmental Elective-2 | DEC/GEC | 4 | 3 | 1/0 | 0/2 | 3 | 0 | 15/25 | 25/0 | 20/25 | 40/50 | - |
| 4 | --- | Open Elective | OEC | 3 | 3 | 0 | 0 | 3 | 0 | 25 | 0 | 25 | 50 | - |
| | **Total** | | | **15** | 12 | 2/0 | 2/6 | | | | | | | |
| **Sixth Semester** | | | | | | | | | | | | | | |
| 1 | CEC-302 | Microwave Engineering | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 25 | 20 | 40 | - |
| 2 | CEC-304 | Embedded Systems | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 25 | 20 | 40 | - |
| 3 | CEC-3XX | Departmental Elective -3 | DEC/GEC | 3 | 3 | 0 | 0 | 3 | 0 | 25 | 0 | 25 | 50 | - |
| 4 | CEC-3XX | Departmental Elective - 4 | DEC/GEC | 4 | 3 | 1/0 | 0/2 | 3 | 0 | 15/25 | 25/0 | 20/25 | 40/50 | - |
| | **Total** | | | **15** | 12 | 1/0 | 4/6 | | | | | | | |

## IV Year

| Seventh Semester | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Teaching Scheme | | | | | Contact Hours/Week | | | Exam Duration (hrs.) | | Relative Weights (%) | | | | |
| S. No. | Subject Code | Course Title | Subject Area | Cr | L | T | P | Theory | Practical | CWS | PRS | MTE | ETE | PRE |
| 1 | CEC-401 | Information Theory & Coding | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 25 | 20 | 40 | - |
| 2 | **CEC-403** | Wireless Communication | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 25 | 20 | 40 | -- |
| 3 | **CEC-4XX** | Departmental Elective Course- 5 | DEC/ GEC | 3 | 3 | 0 | 0 | 3 | 0 | 25 | 0 | 25 | 50 | -- |
| 4 | **CEC-4XX** | Departmental Elective Course- 6 | DEC/ GEC | 4 | 3 | 1/0 | 0/2 | 3 | 0 | 15/ 25 | 25/0 | 20 /25 | 40/ 50 | -- |
| 5 | **CEC-405** | *B. Tech Project | | 4 | - | - | - | - | - | - | - | 40 | 60 | -- |
| | **Total** | | | **19** | 12 | 1/0 | 4/6 | | | | | | | |
| **Eighth Semester** | | | | | | | | | | | | | | |
| 1 | **CEC-402** | Radar & Satellite Communication | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 25 | 20 | 40 | - |
| 2 | **CEC-4XX** | Departmental Elective Course- 7 | DEC/ GEC | 4 | 3 | 0/1 | 2/0 | 3 | 0 | 15/ 25 | 25/- | 20/ 25 | 40/ 50 | -- |
| 3 | **CEC-4XX** | Departmental Elective Course- 8 | DEC/ GEC | 3 | 3 | 0/1 | 2/0 | 3 | 0 | 15/ 25 | 25/- | 20 25 | 40/ 50 | -- |
| 4 | **CEC-406** | *B. Tech Project (Contd. From VII Sem.) | DCC | 8 | - | - | - | - | - | - | - | 40 | 60 | -- |
| | **Total** | | | **19** | 9 | 1/0 | 2/4 | | | | | | | |

* To be done at their place of work

## LIST OF DEPARTMENTAL ELECTIVE COURSES

| S. NO. | SUBJECT CODE | SUBJECTS | ELECTIVE NO. |
|---|---|---|---|
| 1. | CEC-305 | Semiconductor Device Electronics | DEC -1,DEC-2 |
| 2. | CEC-307 | Antenna Design | |
| 3. | CEC-309 | Bio – Medical Electronics &Instrumentation | |
| 4. | CEC-311 | Algorithms Design and Analysis | |
| 5. | CEC-313 | Microprocessors and Interfacing | |
| 6. | CEC-315 | Computer Communication Networks | |
| 7. | CEC-317 | Operating Systems | |
| 8. | CEC-319 | CMOS Analog Integrated Circuits | |
| 9. | CEC-321 | IC Technology | |
| 10. | CEC-323 | Control Systems | |
| 11. | CEC-308 | Analog Filter Design | DEC-3, DEC-4 |
| 12. | CEC-310 | Testing and Diagnosis of Digital System Design | |
| 13. | CEC-312 | Software Defined Radio and Cognitive Radio | |
| 14. | CEC-314 | RF Design | |
| 15. | CEC-316 | Wireless Sensor Networks | |
| 16. | CEC-318 | RF Circuits in CMOS Technology | |
| 17. | CEC-320 | Soft Computing | |
| 18. | CEC-322 | Green Technologies | |
| 19. | CEC-324 | Nano Electronics | |
| 20. | CEC-326 | Data Converters | |
| 21. | CEC-328 | Speech Recognition | |
| 22. | CEC-330 | Digital Image Processing | |

| S. NO. | SUBJECT CODE | SUBJECTS | ELECTIVE NO. |
|---|---|---|---|
| 23. | CEC-409 | Computer Vision | DEC-5, DEC-6 |
| 24. | CEC-411 | Bio – Medical Signal and Image Processing | |
| 25. | CEC-413 | Power Electronics | |
| 26. | CEC-415 | System on Chip Design | |
| 27. | CEC-417 | CAD for VLSI Design | |
| 28. | CEC-419 | Memory Design | |
| 29. | CEC-421 | Computer and Numerical Techniques in Electromagnetics | |
| 30. | CEC-423 | Internet and Web Technology | |
| 31. | CEC-425 | Mixed Signal Design | |
| 32. | CEC-427 | Optical Communication | |
| 33. | CEC-408 | Low Power VLSI Design | DCE-7,DEC-8 |
| 34. | CEC-410 | Advance Coding Theory | |
| 35. | CEC-412 | Machine Learning | |
| 36. | CEC-414 | EMC / EMI | |
| 37. | CEC-416 | Pattern Recognition | |
| 38. | CEC-418 | Estimation and Detection Theory | |
| 39. | CEC-420 | Cloud Computing | |
| 40. | CEC-422 | Robotics & Machine Vision | |
| 41. | CEC-424 | Fault Tolerant Computing | |
| 42. | CEC-426 | Distributed Computing | |
| 43. | CEC-428 | Neuro-Electronics | |
| 44. | CEC-430 | Advance Computer Architecture | |
| 45. | CEC-432 | Bio – Impedance Based Measurements | |
| 46. | CEC-434 | Fundamentals of MIMO | |
| 47. | CEC-436 | Advance Microwave & Antenna Design | |

**DEPARTMENT OF MECHANICAL ENGINEERING**
**BACHELOR OF TECHNOLOGY (EVENING) MECHANICAL ENGINEERING**

## I Year

| First Semester | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Teaching Scheme | | | | | Contact Hours/Week | | | Exam Duration (hrs.) | | Relative Weights (%) | | | | |
| S. No. | Subject Code | Course Title | Subject Area | Cr | L | T | P | Theory | Practical | CWS | PRS | MTE | ETE | PRE |
| 1 | CEE-105 | Electrical Technology | AEC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 25 | 20 | 40 | - |
| 2 | CME-101 | Metallurgy | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 25 | 20 | 40 | - |
| 3 | CME-103 | Engineering Analysis and Design | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 25 | 20 | 40 | - |
| 4 | CHU-101 | Communication Skills | HMC | 2 | 2 | 0 | 0 | 3 | 0 | 25 | 0 | 25 | 50 | - |
| | **Total** | | | **14** | 11 | 0 | 6 | | | | | | | |
| **Second Semester** | | | | | | | | | | | | | | |
| 1 | CEC-106 | Electronics | AEC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 25 | 20 | 40 | - |
| 2 | CME-102 | Strength of Materials | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 25 | 0 | 25 | 50 | - |
| 3 | CME-104 | Fluid Mechanics and Machines | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 25 | 20 | 40 | - |
| 4 | CMG-102 | Fundamentals of Management | HMC | 3 | 3 | 0 | 0 | 3 | 0 | 25 | 0 | 25 | 50 | - |
| | **Total** | | | **15** | 12 | 0 | 6 | | | | | | | |

## II Year

| Third Semester | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Teaching Scheme | | | | | Contact Hours/Week | | | Exam Duration (hrs.) | | Relative Weights (%) | | | | |
| S. No. | Subject Code | Course Title | Subject Area | Cr | L | T | P | Theory | Practical | CWS | PRS | MTE | ETE | PRE |
| 1 | CME-201 | Thermal Engineering - I | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 25 | 20 | 40 | - |
| 2 | CME-203 | Theory of Machines | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 25 | 20 | 40 | - |
| 3 | CME-205 | Production Technology - I | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 25 | 20 | 40 | - |
| 4 | CHU-201 | Professional Ethics and Human Values | HMC | 2 | 2 | 0 | 0 | 3 | 0 | 25 | 0 | 25 | 50 | - |
| | **Total** | | | **14** | 11 | 0 | 6 | | | | | | | |
| **Fourth Semester** | | | | | | | | | | | | | | |
| 1 | CME-202 | Thermal Engineering - II | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 25 | 20 | 40 | - |
| 2 | CME-204 | Production Technology – II | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 25 | 20 | 40 | - |
| 3 | CME-206 | Instrumentation | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 25 | 20 | 40 | - |
| 4 | CHU-202 | Engineering Economics | HMC | 3 | 3 | 0 | 0 | 3 | 0 | 25 | 0 | 25 | 50 | - |
| | **Total** | | | **15** | 12 | 0 | 6 | | | | | | | |

## III Year

| Fifth Semester | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Teaching Scheme | | | | | Contact Hours/Week | | | Exam Duration (hrs.) | | Relative Weights (%) | | | | |
| S. No. | Subject Code | Course Title | Subject Area | Cr | L | T | P | Theory | Practical | CWS | PRS | MTE | ETE | PRE |
| 1 | CME-301 | Heat Transfer | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 25 | 20 | 40 | - |
| 2 | CME-303 | Refrigeration and Air Conditioning | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 25 | 20 | 40 | - |
| 3 | CME-3xx | Department Elective-I | DEC/ GEC | 4 | 3 | 1/0 | 0/2 | 3 | 0 | 15/ 25 | 25/0 | 20/ 25 | 40/ 50 | - |
| 4 | --- | Open Elective | OEC | 3 | 3 | 0 | 0 | 3 | 0 | 25 | 0 | 25 | 50 | - |
| | **Total** | | | **15** | 12 | 2/0 | 4/6 | | | | | | | |
| **Sixth Semester** | | | | | | | | | | | | | | |
| 1 | CME-302 | Production Management | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 25 | 20 | 40 | - |
| 2 | CME-3xx | Department Elective-2 | DEC/ GEC | 4 | 3 | 1/0 | 0/2 | 3 | 0 | 15/ 25 | 25/0 | 20/ 25 | 40/ 50 | - |
| 3 | CME-3xx | Department Elective-3 | DEC/ GEC | 3 | 3 | 0 | 0 | 3 | 0 | 25 | 0 | 25 | 50 | - |
| 4 | CME-3xx | Department Elective-4 | DEC/ GEC | 4 | 3 | 1/0 | 0/2 | 3 | 0 | 15/ 25 | 25/0 | 20/ 25 | 40/ 50 | - |
| | **Total** | | | **15** | 12 | 2/0 | 2/6 | | | | | | | |

## IV Year

| Seventh Semester | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Teaching Scheme | | | | | Contact Hours/Week | | | Exam Duration (hrs.) | | Relative Weights (%) | | | | |
| S. No. | Subject Code | Course Title | Subject Area | Cr | L | T | P | Theory | Practical | CWS | PRS | MTE | ETE | PRE |
| 1 | CME-401 | Flexible Manufacturing Sysstems | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 25 | 20 | 40 | - |
| 2 | CME-403 | Machine Design | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 25 | 20 | 40 | - |
| 3 | CME-4xx | Department Elective-5 | DEC/ GEC | 3 | 3 | 0 | 0 | 3 | 0 | 25 | 0 | 25 | 50 | - |
| 4 | CME-4xx | Department Elective-6 | DEC/ GEC | 4 | 3 | 1/0 | 0/2 | 3 | | 15/ 25 | 25/0 | 20/ 25 | 40/ 50 | |
| 5 | CME-405 | *B. Tech Project | | 4 | - | - | - | 3 | 0 | | | 40 | 60 | |
| | **Total** | | | **19** | 12 | 2/0 | 4/6 | | | | | | | |
| **Eighth Semester** | | | | | | | | | | | | | | |
| 1 | CME-402 | Total Quality Management | DCC | 4 | 3 | 0 | 2 | 3 | 0 | 15 | 25 | 20 | 40 | - |
| 2 | CME-4xx | Department Elective-7 | DEC/ GEC | 4 | 3 | 1/0 | 0/2 | 3 | 0 | 15/ 25 | 25/0 | 20/ 25 | 40/ 50 | - |
| 3 | CME-4xx | Department Elective-8 | DEC/ GEC | 3 | 3 | 0 | 0 | 3 | 0 | 25 | 0 | 25 | 50 | - |
| 4 | CME-404 | *B. Tech Project (continued from 7th sem) | | 8 | - | - | - | | | | | 40 | 60 | |
| | **Total** | | | **19** | 9 | 1/0 | 2/4 | | | | | | | |

*To be done at their place of work

## List of Departmental Elective Courses

| S.No. | Subject Code | Subject | Elective no. |
|---|---|---|---|
| 1. | CME-305 | Operations Research | DEC -1 |
| 2. | CME-307 | Advanced Machining Process | |
| 3. | CME-304 | Power Plant Engineering | DEC -2 |
| 4. | CME -306 | Non-Conventional Energy Sources | |
| 5. | CME-308 | I.C. Engines | DEC-3 |
| 6. | CME-310 | Alternative Fuels Technology. | |
| 7. | CME-312 | Tool Engineering | DEC -4 |
| 8. | CME-314 | Supply Chain Management | |
| 9. | CME-405 | Product Design and Development | DEC -5 |
| 10. | CME-407 | Computer Aided Manufacturing | |
| 11. | CME-409 | Mechatronics | DEC -6 |
| 12. | CME-411 | Robotics & Automation. | |
| 13. | CME-406 | Automobile Engineering | DEC -7 |
| 14. | CME -408 | Gas Dynamics and Jet Propulsion | |
| 15. | CME-410 | Mechanical Vibrations | DEC-8 |
| 16. | CME-412 | Finite Element Method | |

## List of Open Elective Courses B.Tech (Evening)

| S.No. | SUBJECT CODE | SUBJECTS |
|---|---|---|
| 1. | CCO351 | Enterprise & Java Programming |
| 2. | CCO353 | E-commerce & ERP |
| 3. | CCO355 | Cryptography & Information Security |
| 4. | CCO357 | Operating System |
| 5. | CCO359 | Intellectual Property Rights & Cyber Laws |
| 6. | CCO361 | Database Management System |
| 7. | CEC351 | Mechatronics |
| 8. | CEC353 | Computer Vision |
| 9. | CEC355 | Embedded System |
| 10. | CEC 357 | Digital Image Processing |
| 11. | CEC359 | VLSI Design |
| 12. | CEE351 | Power Electronic Systems |
| 13. | CEE353 | Electrical Machines and Power Systems |
| 14. | CEE355 | Instrumentation Systems |
| 15. | CEE357 | Utilization of Electrical Energy |
| 16. | CEE359 | Non-conventional Energy Systems |
| 17. | CEE361 | Embedded Systems |
| 18. | CEN351 | Environmental Pollution & E- Waste Management |
| 19. | CEN353 | Occupational Health & Safety Management |
| 20. | CEN355 | GIS & Remote Sensing |
| 21. | CEP351 | Physics of Engineering Materials |
| 22. | CEP353 | Nuclear Security |
| 23. | CHU351 | Econometrics |
| 24. | CMA351 | History Culture & Excitement of Mathematics |
| 25. | CME351 | Power Plant Engineering |
| 26. | CME353 | Renewable Sources of Energy |
| 27. | CME355 | Combustion Generated Pollution |

| S.No. | SUBJECT CODE | SUBJECTS |
|---|---|---|
| 28. | CME357 | Thermal System |
| 29. | CME359 | Refrigeration & Air Conditioning |
| 30. | CME361 | Industrial Engineering |
| 31. | CME363 | Product Design & Simulation |
| 32. | CME365 | Computational fluid dynamics |
| 33. | CME367 | Finite Element Methods |
| 34. | CME369 | Total Life Cycle Management |
| 35. | CME371 | Value Engineering |
| 36. | CMG351 | Fundamentals of Financial Accounting and Analysis |
| 37. | CMG353 | Fundamentals of Marketing |
| 38. | CMG355 | Human Resource Management |
| 39. | CMG357 | Knowledge and Technology Management |
| 40. | CPE351 | Advance Machining Process |
| 41. | CPE 353 | Supply Chain Management |
| 42. | CPE355 | Work Study Design |
| 43. | CPE357 | Product Design & Simulation |
| 44. | CPE359 | Total Life Cycle Management |
| 45. | CPE361 | Total Quality Management |
| 46. | CPT361 | High Performance Polymers |
| 47. | CPT363 | Separation Technology |
| 48. | CPT365 | Non-Conventional Energy |
| 49. | CPT367 | Polymer Waste Management |
| 50. | CPT369 | Nanotechnology in Polymers |
| 51. | CPT371 | Applications of Polymer Blends and Composite |
| 52. | CIT 351 | Artificial Intelligenceand Machine Learning |
| 53. | CIT 353 | Data Structures and Algorithms |
| 54. | CIT 355 | Communication and Computing Technology |
| 55. | CIT 357 | Internet and Web Programming |
| 56. | CIT 359 | Java Programming |

# DEPARTMENT OF CIVIL ENGINEERING

## BACHELOR OF TECHNOLOGY (EVENING)CIVIL ENGINEERING

### Syllabus for First Year B. Tech. (Evening) Civil Engineering

1. Subject Code: **CEC-105** : Course Title:**Basic Electronics and Instrumentation**
2. Contact Hours : L: 03,T: 00, P: 02
3. Examination Duration (Hrs.) : Theory : 03 Hrs., Practical : 00
4. Relative Weight : CWS: 15, PRS: 20, MTE: 25, ETE: 40, PRE: 00
5. Credits : 04
6. Semester : First
7. Subject Area : AEC
8. Pre-requisite : NIL
9. Objective : To familiarize the students with the concepts of basic electronics and instrumentation.
10. Details of Course :

| S. No. | Contents | Contact Hours |
|---|---|---|
| 1 | **Introduction to semiconductor physics:** Classification of materials (conductors,insulators and semiconductor) Intrinsic and extrinsic semiconductors, drift and diffusion currents, **p-n Junction diode:** Physical operation, diode current equation and I-V characteristic and piecewise linear model, concept of load line, Breakdown in p-n diodes, Zener diode.<br><br>**Diode Applications**: Rectifiers Zener regulators, clipping and clamping circuits. | 07 |
| 2 | **Bipolar Junction Transistor (BJT):** Physical structure and modes of operation, BJT current components, BJT characteristics, large-signal equivalent circuit and concept of load line, small-signal equivalent. Basic single- stage BJT amplifiers (CE,CB, CC) and frequency response of an RC coupled amplifier. JFET/MOSFET characteristics and amplifiers. | 08 |

| S. No. | Contents | Contact Hours |
|---|---|---|
| 3 | Concept of positive and negative feedback, merits and demerits of negative feedback, Principle of oscillation, LC and RC oscillators. Power Amplifiers (Class A and Class B),operational Amplifier and basic applications. **Operational amplifiers:**Ideal characteristics, basic Applications: Inverting and no inverting amplifier Integrator, Differentiator,voltage followerSumming and difference circuit. | 08 |
| 4 | **Introduction to digital circuits:** Boolean algebra, Logic Gates, minimization of switching function: Karnaugh map method,Binary adder, subtractor, multiplexerand decoder, flip flops, Counters, Shift Registers. | 06 |
| 5 | **Electronic Measurements:** Electronic voltmeter, multimeter. Differential voltmeters, time, frequency and phase angle measurements using CRO, Digital voltmeter, multimeter and storage oscilloscope. | 06 |
| 6 | **Instrumentation:** Transducers, strain gauges, inductive & capacitive transducers, piezoelectric and Hall-effect transducers, thermisters, thermocouples, photo-diodes & phototransistors, signal conditioning and telemetry, basic concepts of smart sensors and application. | 07 |
| | **Total** | **42** |

11. Suggested Books :

| S. No. | Title, Author, Publisher and ISBN No. |
|---|---|
| 1. | ElectrElectronic Devices and Circuit Theory by Robert L. Boylestad and Louis Nashelsky, Pearson. |
| 2. | Electronics analog and Digital by I.J.Nagrath. |
| 3. | Modern Digital Electronics by R. P. Jain (TMH). |
| 4. | Measurements and instrumentation by A.K Sawhney; Dhanpatrai & Sons. |

1. Subject Code: **CCE-101** : Course Title:**Civil Engineering Basics and Applications**
2. Contact Hours : L: 03,T: 00, P: 02
3. Examination Duration (Hrs.) : Theory : 03, Practical : 00
4. Relative Weight : CWS: 15, PRS: 15, MTE: 30, ETE: 40, PRE: 00
5. Credits : 04
6. Semester : First

7. Subject Area : DCEE
8. Pre-requisite : NIL
9. Objective : To familiarize the students with the concepts Civil Engineering and related applications.
10. Details of Course :

| S. No. | Contents | Contact Hours |
|---|---|---|
| | **PART A** | |
| 1 | **Building Materials:** Bricks, stone, lime, timber, plywood, glass, plastics, steel, aluminum; classification properties and selection criteria, introduction to new materials. | 08 |
| 2 | **Building Construction:** Importance of building byelaws, loads on buildings. types of foundations and selection criteria, brick masonry, stone masonry & bonds. Types of walls, partition a cavity walls, design criteria. | 12 |
| 3 | **Cement:** Manufacturing & types, compositions, uses and specifications, aggregates, classifications and properties, admixtures: types properties and selection criteria.<br>**Mortar:** Lime and cement mortars, types and classifications.Concrete mix design : as per IS code. | 10 |
| 4 | **Introduction to Engineering Geology:**Dynamics of earth, study of minerals & rocks, structural features of rock, weathering processes, geological time scale, structural features & classification of rocks. | 10 |
| | **Total** | **40** |

**Experiments :** The students would conduct experiments for some of the following aspects.

1. Normal consistency, initial and final setting time of cement.
2. Fineness and soundness of cement.
3. Heat of hydrations of cement, specific gravity of cement, fine and course aggregates.
4. Sieve analysis and fineness modulus of fine and course aggregates.
5. Water absorption fine and coarse aggregates and impurities tests on aggregates.
6. Compressive strength, workability of lime and cement mortars.
7. Proportioning of aggregates and mix design.
8. Work ability by slump test, compaction factors and Vee-bee consistometer test along with compressive and tensile strength of concrete.
9. Non-destructive tests on concrete (Rebound hammer and UPVT).

11. Suggested Books:

| S. N. | Title, Author, Publisher and ISBN No. | Year of publication |
|---|---|---|
| 1. | Building Materials, Duggal, S. K. New Age International Publishers (ISBN 81-224-1435-4). | 2005 |
| 2. | Building Construction, B.C. Punmia, Laxmi Publications Pvt. Ltd., New Delhi (ISBN-81-7008-053-3). | 2008 |
| 3. | Concrete Technology, AM Neville and J. J. Brooks. Dorling Kindersley (India) Pvt. Ltd. (ISBN 978 -81-317-0536-0) | 2012 |
| 4. | Engineering & General Geology, Parbin Singh, S. K. Kataria and Sons (ISBN-13-9788188458516). | 2004 |
| 5. | Surveying Vol. I, B C Punamia, Laxmi Publications Pvt. Ltd., New Delhi (ISBN-81-7008-054-1). | 2005 |

| | | | |
|---|---|---|---|
| 1. | Subject Code: **CCE-103** | : | Course Title:**Engineering Analysis and Design** |
| 2. | Contact Hours | : | L: 03,T: 00, P: 02 |
| 3. | Examination Duration (Hrs.) | : | Theory : 03, Practical : 02 |
| 4. | Relative Weight | : | CWS: 15, PRS: 15, MTE: 30, ETE: 40, PRE: 00 |
| 5. | Credits | : | 04 |
| 6. | Semester | : | ODD-I |
| 7. | Subject Area | : | EAD |
| 8. | Pre-requisite | : | NIL |
| 9. | Objective | : | To familiarize the students with the concepts Civil Engineering and related applications. |

10. Details of Course :

| S.No. | Contents | ContactHours |
|---|---|---|
| | **PART A** | |
| 1 | **Structural Engineering:** Various infrastructural projects, types of structures (1 D, 2 D & 3 D), equations of equilibrium, analysis and design, stress-strain characteristics of concrete and steel, design philosophies. | 07 |
| 2 | **Geotechnical Engineering:** Introduction to soil and rock, foundations for different type of structures, earth retaining structures, stability analysis of slopes such as embankments, levies, dams and canals. Introduction to underground structures like tunnels, shafts, caverns and some important ground improvement techniques. | 07 |
| 3 | **Water Resources Engineering**: Hydrological cycle, types of flow, flows in pipes and channels, types of dams, introduction to hydro power engineering. | 07 |
| 4 | **Transportation Engineering:** Modes of transportation, transportation system, role of traffic engineers, design concepts in transportation engineering, pavement/runway materials, introduction to railway systems. | 07 |
| 5 | **Environmental Engineering**: Sources of water, Quantitative and qualitative analysis, water and waste water design, concepts of water and waste water treatment plants, mode of conveyance of waste water. | 07 |
| 6 | **Surveying:** Classification of survey, types of equipment for surveying, importance and application of survey, introduction to GIS & GPS and their applications | 05 |
| | **Total** | **40** |

11. Suggested Books :

| S.N. | Title, Author, Publisher and ISBN No. | Year of publication |
|---|---|---|
| 1. | Elementary Structural Analysis, Wilbur, Norris and Utku, Mc Graw Hill College, (ISBN 10-0070659338). | 1990 |
| 2. | Reinforced concrete Limit State Design , A. K. Jain, Nem Chand and brothers, Roorkee, (ISBN 10-8185240663). | 2000 |
| 3. | Basic and Applied Soil Mechanics, Gopal Ranjan and Rao, New Age International Delhi, (ISBN 978-81-224-1223-9). | 2000 |
| 4. | Water Resources and Water Power Engineering, N. Subramanyam, New Age International Delhi, (ISBN 13-978-818-940-1290). | 2001 |
| 5. | Water & Waste Water Technology, Hammer & Hammer, Prentice-Hall of India, New Delhi, (ISBN 81-203-2108-1) | 2003 |
| 6. | Highway Engineering, Khanna & Justo, Nem, Chand & Brothers, Roorkee, (ISBN 81-85240-77-9). | 2005 |

1. Subject Code: **CHU-101** : Course Title:**Communication Skils**
2. Contact Hours : L: 02,T: 00, P: 00
3. Examination Duration (Hrs.) : 03 Hrs.
4. Relative Weight : CWS: 25, PRS: 00, MTE: 25, ETE: 50, PRE: 00
5. Credits : 02
6. Semester : First
7. Subject Area : HMC
8. Pre-requisite : NIL
9. Objective : To impart essential skills required for effective communication in English language.

10. Details of Course :

| Sl. No. | Contents | Contact Hours |
|---|---|---|
| 1 | **Communication**<br>C. Communication: Process, Features, Barriers<br>D. Language, Technology and Communication | 02 |
| 2 | **Unit II: Grammar and Usage**<br>D. Vocabulary-Words/Word Formation, Confusing Word Pairs<br>E. Sentence Construction, Sentence Types, Direct/Indirect Speech<br>F. Punctuation, Error Spotting, Idioms and Phrases | 06 |
| 3 | **Unit III: Oral Communication**<br>D. Phonetics of English, Vowels, Consonants, syllables, transcription of words and simple sentences using IPA: Speech Sounds and their articulation; phonemes, Syllable, Stress, Transcription of words and Simple Sentences<br>E. Language Lab Practice for Oral Communication: Project Presentations, Group Discussions, Debates, Interviews etc. | 12 |
| 4 | **Unit IV: Written Technical Communication**<br>D. Composition- Descriptive, Explanatory, Analytical and Argumentative<br>E. Writing Paragraphs ( Essay, Summary, Abstract)<br>F. Reading and Comprehension, Providing working mechanism of instruments, appliances, description of processes, their operations and descriptions; Drawing Inferences from graphs, charts, Diagrams etc. | 12 |
| 5 | **Unit V: Texts for Appreciation and Analysis**<br>D. Improve your Writing by V. N. Arora and Lakshmi Chandra (OUP)<br>E. Vijay Seshadri. *3 Sections* (2014) **or***Gestures: Poetry from SAARC Countries* Ed. K. Satchidanandan. Sahitya Akademi: New Delhi ISBN-81-260-0019-8<br>F. Ursula K. Leguin. *The Telling*, Harcourt Inc. 2000 **or**<br>*Animal Farm* by George Orwell (1945) ISBN: 9781502492791 **or**<br>*Frankenstein* by Mary Shelley (1818) Harper Collins India Ltd.: NOIDA ISBN: 9780007350964 | 10 |
| | **Total** | **42** |

**Text Books:**

| Sl. No. | Name of Books, Authors, Publishers | Year of Publication/Reprint |
|---|---|---|
| 1 | *Improve your Writing* by V.N.Arora and Lakshmi Chandra OUP: Delhi ISBN 13: 978-0-19-809608-5 | 1981, 2013 (Revised Edition) |
| 2 | *Technical Communication: Principles and Practice* by Meenakshi Raman and Sangeeta Sharma OUP: Delhi. ISBN-13: 9780-19-806529-6 | 2011, Reprinted in 2014 |
| 3 | *English Phonetics and Phonology: A Practical Course*. By Peter Roach. Cambridge: Cambridge University Press. (Fourth Edition) ISBN: 978-0-521-14921-1 | 2009, 2014 (Reprinted) |
| 4 | Vijay Seshadri. *3 Sections*, Harper Collins India Ltd.: India. ISBN: 9789351367734. **or** *Gestures: Poetry from SAARC Countries* Ed. K. Satchidanandan. Sahitya Akademi: New Delhi ISBN- 81-260-0019-8 | 2014<br>1996, Reprint 2007 |
| 5 | Ursula K. Leguin. *The Telling*, Harcourt Inc. 2000 **or** *Animal Farm* by George Orwell (1945) ISBN: 9781502492791 **or** *Frankenstein* by Mary Shelley (1818) Harper Collins India Ltd.: Noida, ISBN: 9780007350964 | 2000<br>1945/ 2014 Reprint<br>1818/ Latest Reprint 2012 |

11. Suggested Books

| Sl. No. | Name of Books, Authors, Publishers | Year of Publication/Reprint |
|---|---|---|
| 1. | Maison, Margaret M. ***Examine Your English.***. Orient Blackswan: Delhi, | 2009 |
| 2. | Sharma, Sangeeta & Binod Sharma. ***Communication Skills for Engineers & Scientists***, PHI. | 2012 |
| 3. | Swan, Michael, Catherine Walter. ***Oxford English Grammar Course****. OUP: Delhi,* | 2011 |
| 4. | Kumar, E Suresh & P Sreehari ***A Handbook for English Language Laboratories***, 2nd Edition, Cambridge University Press,Foundation Books, | 2014 |
| 5. | Dutt, P Kiranmai, Geetha Rajeevan & CLN Prakash ***A Course in Communication Skills****. Cambridge University Press (*Foundation Books). | 2013 |
| 6. | Mitra, Barun K. ***Personality Development and Soft Skills***. OUP: Delhi. | 2011 |
| 7. | Apps for Phonetics- Advanced English Dictionary for Windows phone & OALD for Android phone | Latest |

1. Subject Code: **CEN-102** : Course Title:**Environmental Engineering**
2. Contact Hours : L: 03,T: 00, P: 02
3. Examination Duration (Hrs.) : Theory : 03 Hrs., Practical : 00
4. Relative Weight : CWS: 15, PRS: 25, MTE: 20, ETE: 40, PRE: 00
5. Credits : 03
6. Semester : Second
7. Subject Area : AEC
8. Pre-requisite : NIL
9. Objective :
   - To introduce basic concepts of water engineering and design.
   - To understand the characteristics of water & waste water.
   - To introduce the definition, principle, types and design of sedimentation tank.
   - To introduce the definition, principle, types and design of trickling filter, septic tanks, anaerobic sludge digestion, stabilization ponds and aerated lagoons..
   - To introduce the Solid waste management.
   - To introduce basic concepts of Noise pollution
10. Details of Course :

| S. No. | Contents | Contact Hours |
|---|---|---|
| 1 | **UNIT I:** Water demand, domestic, industrial and municipal, variations in demand. Population forecasting. Physical, Chemical and Microbiological quality parameters. Drinking water quality criteria and standards. Surface, subsurface, selection and development of sources. Quality of sources and their treatment requirements. Design of the component of water distribution systems. Leakage and control, Conveyance: Pipes and conduits for water, rising main, types and capacity of pumps, pipe joints, specials, fittings and valves. | 08 |

| S. No. | Contents | Contact Hours |
|---|---|---|
| 2 | **UNIT II :** Coagulation, common coagulants and coagulant aids and their reactions. Mixing and flocculation basin design. Sedimentation, design principles, discrete and flocculation suspensions, sedimentation tank details. Maintenance treatment unit, Filtration, gravity and pressure filters, single and multimedia filters. Water softening by chemical precipitation and ion exchange. Aeration of water to remove iron and manganese and taste and odour. Disinfectants, chlorination of water supplies. | 08 |
| 3 | **UNIT III :** Wastewater sources and flow rates, domestic, industrial and municipal, variations in flow. Hydraulics of storm sewers, sewer appurtenances. Design of Wastewater collection system. Physical, Chemical and Microbiological characteristics of waste water. Effluent disposal and re-use, surface disposal, Disposal into rivers, self purification, oxygen sag curve, regulations for disposal into sewer/land/stream/sea. | 08 |
| 4 | **UNITIV :** Physical Treatment, screening, activated sludge, trickling filter, septic tanks, anaerobic sludge digestion, stabilization ponds and aerated lagoons. | 08 |
| 5 | **UNIT V :** Solid waste management, sources and composition. Principal industrial and hazardous solid waste, collection, characteristics and disposal. Major air pollutants, sources and effects, measurement of air quality, criteria and standards, Atmospheric cleansing processes (Natural). Noise pollution standards effects and abatement. | 08 |
| | **Total** | **40** |

**Books Suggested:**


1. Peavy, Rowe and Tchobanoglous: Environmental Engineering
2. Garg: Water Supply Engineering (Environmental Engineering Vol.-I)
3. Punmia: Water Supply and Wastewater Engineering
4. Steel and McGhee: Water Supply and Sewerage.
5. Birdie: Water Supply and Sanitary Engineering.
6. Wastewater Engg. by Metcalf and Eddy (McGrow Hill)

1. Subject Code: **CCE-102** : Course Title:**Engineering Mechanics**
2. Contact Hours : L: 03,T: 00, P: 02
3. Examination Duration (Hrs.) : Theory: 03 Hrs., Practical: 02
4. Relative Weight : CWS: 15, PRS: 15, MTE: 30, ETE: 40, PRE: 00
5. Credits : 04
6. Semester : ODD-II
7. Subject Area : DCC
8. Pre-requisite : NIL
9. Objective : To familiarize the students with the concepts Civil Engineering and related applications.
10. Details of Course :

| S. No. | Contents | Contact Hours |
|---|---|---|
| | **PART A** | |
| 1 | **Fundamental concepts**: System of units, scalar and vector quantities, characteristic of force, fundamental laws of mechanics, system of forces, two force systems, three force system, equilibrium of a body, equilibrium equations for plane force and space force system | 05 |
| 2 | **Co-planar concurrent forces**: Composition of force, resolution of forces, concurrent and non concurrent forces, non concurrent force, couple, moment, Varignon's theorem, resultant of coplanar force systems and reaction of supports. | 05 |
| 3 | **Analysis of pin jointed frames:** Perfect, deficient and redundant frames, method of Joints, method of sections, tension co-efficient method and graphical method for plane and space frames. | 07 |
| 4 | **Friction and lifting machines**: Law of friction, angle of friction, angle of repose and cone of friction, wedges, law of machines, mechanical advantage and velocity ratio, efficiency, self-locking and reversibility of machines, pulley, wheel and axle. | 07 |
| 5 | **Centroid and moment of inertia:** Centre of gravity, Theorem of Pappus and Guldinus, moment of inertia, parallel axis theorem, polar moment of inertia, radius of gyration and moment of inertia of composite sections, mass moment of inertia and product moment of inertia. | 08 |
| 6 | **Kinematics and kinetic:** Rectilinear and curvilinear motion, projectile, relative motion, kinetics of particle, Newton's laws, work, energy and power, conservation of energy, impulse and momentum, impact. | 08 |
| | **Total** | 40 |

11. Suggested Books:

| S. N. | Name of Books/ Authors | Year of Publication |
|---|---|---|
| 1 | Rajshekharan & Sankarsubramanian, 'Computational Structural Mechanics', Prentice Hall of India, (ISBN 978-81-203-1734-3) | 2007 |
| 2 | Meriam, 'Engineering Mechanics: Dynamics", Volume 2, 5th ed. (ISBN 9971512998) | 2009 |
| 3 | Hibbeler, "Mechanics of Materials', (ISBN 8131708020) | 2012 |

1. Subject Code: **CCE-104** : Course Title:**Fluid Mechanics**
2. Contact Hours : L: 03,T: 00, P: 02
3. Examination Duration (Hrs.) : Theory: 03 Hrs., Practical: 02
4. Relative Weight : CWS: 15, PRS: 15, MTE: 30, ETE: 40, PRE: 00
5. Credits : 04
6. Semester : ODD-I
7. Subject Area : DCC
8. Pre-requisite : NIL
9. Objective : To familiarize the students with the concepts Civil Engineering and related applications.
10. Details of Course :

| S. No. | Contents | Contact Hours |
|---|---|---|
| | **PART A** | |
| 1 | **Introduction**: Properties of fluids, types of fluids and continuum principle. | 03 |
| 2 | **Fluid Statics:** Basic definition, hydro statics law, Pascal's law, manometers, hydro statics forces on submerged surfaces, buoyancy. | 06 |
| 3 | **Kinematics of flow:** Types of flow, streamline, pathline, principle of conservation of mass, velocity, acceleration, velocity potential and stream function, vorticity and circulation. | 05 |

| S. No. | Contents | Contact Hours |
|---|---|---|
| 4 | **Fluid dynamics:** Euler;s equation, Bernoulli's equation, and its application, Pitot tube, venturimeter, Orifices and mouth pieces. | 05 |
| 5 | **Laminar and turbulent flow in pipe:** Laminar flow through pipes, velocity distribution, turbulent flow, Reynolds equation, prandtl's mixing length theory, velocity distribution in pipe flow and plate flow, Darcy's weisbach equation, friction factor, water hammer. | 07 |
| 6 | **Dimensional analysis and models:** Dimensional homogeneity, Rankines and Buckingham'a pie theorem, dimensionless numbers, Types of models and model analysis. | 05 |
| 7 | **Boundary layer theory:** Concept of boundary layer, laminar and turbulent boundary layers, boundary layer thickness, laminar sub-layer, hydrodynamically smooth and rough boundaries, cavitations. | 06 |
| 8 | **Drag and lift:** Forces exerted by flowing fluid on rest body, drag and lift, streamlined body and bluff body, skin friction, drag on sphere, cylinder and flat plate. | 04 |
| | **Total** | 41 |

11. Suggested Books:

| S. N. | Name of Books/ Authors | Year of Publication |
|---|---|---|
| 1 | Bansal, R.K. "Fluid Mechanics and hydraulics machines", Laxmi Publications(P) Ltd. (ISBN 81 7008 311 7) | 2008 |
| 2 | Garde, R.J. and Mirajgaoker, A.G. "Engineering fluid Mechanics", Nem Chand & Bros. (ISBN 81 88429 01 5) | 2000 |
| 3 | Som, S.K. and Biswas, G., "Fluid Mechnics" Tata pMcGraw Hill. (ISBN 21 345 24561) | 2004 |
| 4 | Kumar, K.L., "Engineering fluid Mechanics", Eurasia Publishing House (P) LTD. (ISBN 81 219 0100 6) | 2000 |
| 5 | Ojha, C.S.P., "Fluid Mechanics and Machinery, OXFORD, University Press. (ISBN 01 19 569963 7) | 2010 |
| 6 | Rajput, R. K., "Fluid Mechanic", S. CHAND & COMPANY LTD. (ISBN 81 219 1667 4) | 2004 |

1. Subject Code: **CMG-102** : Course Title:**Fundamentals of Management**
2. Contact Hours : L: 03,T: 00, P: 00
3. Examination Duration (Hrs.) : Theory: 3 Hrs., Practical: 00
4. Relative Weight age : CWS: 25, PRS: 0, MTE: 25, ETE: 50, PRE: 00
5. Credits : 03
6. Semester : Third (ME+CE+EC+EE)
7. Subject Area : HMC
8. Pre-requisite : NIL
9. Objective : The basic objective of this paper is to acquaint the studentswith the basic concepts of management necessary to deal with emerging business environment besides sensitizing them about societal challenges.
10. Details of Course :

| Unit No. | Contents | Contact Hrs. |
|---|---|---|
| 1 | Definition of management, importance of management, management principals, managerial roles, managerial ethos, management vs administration, managerial functions, task and responsibilities, organizational structure, motivation: meaning, theories and techniques | 08 |
| 2 | Concept of business environment, corporate social responsibility and corporate governance, managerial values and ethics | 08 |
| 3 | Objectives and importance of financial management, basics of capital budgeting, cost of capital, emerging sources of funds for new projects, introduction to stock market | 09 |

| Unit No. | Contents | Contact Hrs. |
|---|---|---|
| 4 | Functions of marketing, marketing vs sales, interface of marketing with other departments, customer life time value, new product development, unethical issues in marketing | 08 |
| 5 | Introduction to knowledge management, knowledge society, knowledge economy, building knowledge assets, sources of knowledge, technology innovation process, E-governance: definition, objectives and significance; challenges in Indian context, Digital India programme | 09 |
| | **Total** | **42** |

11. Suggested Books:

| S. No. | Name of Books / Authors/ Publishers | Year of Publication/Reprint |
|---|---|---|
| 1 | Fundamental of Management, Stephen P. Robbins, David A. De Cenzo and Mary Coulter, Pearson Education, ISBN-978-0273755869 | 2011 |
| 2 | Financial Accounting, 4 ed, S.N. Maheshwari and S.K. Maheshwari, Vikas Pulication, ISBN- 8125918523 | 2005 |
| 3. | Management, James A F Stonner, Pearson Education, ISBN - 9788131707043 | 2010 |
| 4. | Marketing Management, 14th ed., Philip Kotler, Kevin Lane Keller, Abraham Koshy and Mithileswar Jha, Pearson Education, New Delhi, (ISBN-10: 9788131767160) | 2013 |
| 5 | Knowledge Management in Organizations: A Critical Introduction, Donald Hislop, Oxford University Press, ISBN: 9780199691937. | 2013 |

## DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING

## BACHELOR OF TECHNOLOGY (EVENING)
## ELECTRONICS & COMMUNICATION ENGINEERING

| | | | |
|---|---|---|---|
| 1. | Subject Code: **CEE-107** | : | Course Title:**Electronics Instrumentation and Measurements** |
| 2. | Contact Hours | : | L: 03,T: 00, P: 00 |
| 3. | Examination Duration (Hrs.) | : | Theory: 03 Hrs., Practical: 00 |
| 4. | Relative Weight age | : | CWS: 25, PRS: 0, MTE: 25, ETE: 50, PRE: 00 |
| 5. | Credits | : | 04 |
| 6. | Semester | : | First |
| 7. | Subject Area | : | AEC |
| 8. | Pre-requisite | : | NIL |
| 9. | Objective | : | To familiarize the students with the concepts of basic electronics measurements and instruments. |
| 10. | Details of Course | : | |

| S. No. | Contents | Contact Hours |
|---|---|---|
| 1 | **System of UNITs:** fundamental and derived UNITs, system International (S.I.) UNITs, Dimension. Potentiometers and Measuring Instruments D.C. Potentiometer; Crompton and vernier types and their applications, Self balancing (automatic) potentiometers, A.C. potentiometer, Co-ordinate and polar types and their applications. | 06 |
| 2 | Operation and construction of galvanometer, (d.c and ac) Ammeters and voltmeters (Moving iron, moving coil and thermal) and wattmeter's (Dynamometer; and induction types) induction type energy meters, testing and compensation, Frequency-meters (Electrical resonance type), single phase and power factor meters, Megger and multimeters. | 06 |

| S. No. | Contents | Contact Hours |
|---|---|---|
| 3 | Measurement of Resistance, Inductance & Capacitance Measurement of low, medium & high resistances, insulation resistance measurement, AC bridges for inductance and capacitance measurement.<br>**Instrument Transformers:** Current and Potential transfers, ratio and phase angle errors, design considerations and testing. | 06 |
| 4 | Electronic Measurements: Electronic voltmeter, multimeter wattmeter & energy meter. Time, Frequency and phase angle measurements using CRO, Spectrum & Wave analyzer, Digital counter, frequency meter, Digital voltmeter, multimeter and storage oscilloscope. B-H curve and measurement of dielectric loss D.C. & AC. voltmeters, Differential voltmeters. A/D and D/C converters.<br>**Magnetic measurement:** Ballistic galvanometers and fluxmeter, Measurement of flux by Ballistic galvanometer and flux meter, Determination of B-H curve and hysteresis loop, Separation of hysterisis and eddy current by using Lloyd Fisher square. | 08 |
| 5 | **Instrumentation:** Transducers, classification & selection of transducers, strain gauges, inductive & capacitive transducers, piezoelectric and Hall-effect transducers, thermisters, thermocouples, photo-diodes & phototransistors, encoder type digital transducers, signal conditioning and telemetry, basic concepts of smart sensors and application. Data Acquisition Systems. | 07 |
| 6 | **UNIT Measurement of Non-electrical quantities:** Primary sensing elements, classification of transducers, Displacement transducers, strain gauges, Temperature transducers and photo- electric transducers, Measurement of strain, temperature and pressure. Overview of Automatic Process Control Systems and Controllers, Computer Aided Measurement and Control Systems, Distributed Control Systems, Microcontroller and PC based Data Acquisition Systems, Digital Signal Transmission and Processing. | 09 |
| | **Total** | **42** |

11. Suggested Books:

| S. No. | Name of Authors /Books / Publishers |
|---|---|
| 1 | Instrumentation Measurement and Feedback by Jones, Tata MCGRAW-Hill. |
| 2 | Measurements and Instrumentation by A.KSawhney; Dhanpatrai & sons |
| 3 | Modern Electronic Instrumentation &Measurement Techniques by Helfrick & Cooper, PHI |
| 4 | Electronic Instrumentation by H.S.Kalsi, TMH |

1. Subject Code: **CEC-101** : Course Title:**Analog Electronics – I**
2. Contact Hours : L: 03,T: 00, P: 02
3. Examination Duration (Hrs.) : Theory: 03 Hrs., Practical: 00
4. Relative Weight age : CWS: 15, PRS: 25, MTE: 20, ETE: 40, PRE: 00
5. Credits : 04
6. Semester : First
7. Subject Area : DCC
8. Pre-requisite : NIL
9. Objective : To familiarize the students with the concepts of basic electronics, SemiconductorDevices such as diodes, transistors- BJT, FET, MOSFET along with their various applications.

10. Details of Course :

| S. No. | Contents | Contact Hours |
|---|---|---|
| 1 | **R**eview **of semiconductor physics, p-n Junction diode:** Physical operation,I-V characteristic and diode equation, Large-signal model, Concept of load line, p-n junction capacitances (depletion and diffusion), small signal ( low and high frequency) model, Breakdown in p-n diodes, Zener diode. | 07 |
| 2 | **Diode Applications**: Rectifier circuits, Zener diode based voltage regulators, limiting and clamping circuits, voltage multipliers, switching behavior of p-n diode, , SPICE model of p-n diode, an example of p-n diode data sheet. | 07 |
| 3 | **Bipolar Junction Transistor(BJT):** Physical structure and modes of operation, BJT current components,The Ebers-Moll model, BJT characteristics, and large-signal equivalent circuit, BJT Biasing for Discrete-Circuit Design, BJT small-signal equivalent, Basic single- stage BJT amplifier configurations, BJT as a switch, SPICE BJT model and simulation examples | 08 |
| 4 | **Metal oxide semiconductor Field Effect Transistors MOSFET:** Physical structure and V-I characteristics of Enhancement/Depletion- type MOSFETs (n/p-channel), Biasing in MOS amplifier circuits, Small signal equivalent circuit of MOSFET, Basic configurations of single-stage MOS amplifier circuits, MOSFET as an analog switch, SPICE MOSFET models and simulation examples. The Junction Field Effect Transistor (JFET): Physical structure, drain and transfer characteristics, SPICE JFET model and simulation examples. | 08 |
| 5 | **Multistage Amplifiers:** Analysis of multistage amplifier using BJT and MOSFETs, Significance of Coupling and bypass capacitor, types of coupling: DC, RC and Transformer, SPICE examples | 04 |
| 6 | **Differential Amplifier :** Large and small signal operation, differential and Common mode operation,BJT and MOS based constant current sources as active loads, Differential Amplifier with active load | 08 |
| | **Total** | **42** |

11. Suggested Books:

| S. No. | Name of Authors /Books / Publishers |
|---|---|
| 1 | Microelectronics circuits by Sedra and Smith; Oxford university press |
| 2 | Fundamentals of Microelectronics circuits by B.Razavi. |
| 3 | Microelectronics by Millman and Grabel; Tata McGraw Hill |
| 4 | Electronic Devices and Circuits, B Kumar and Shail Bala Jain, PHI |

1. Subject Code: **CEC-103** : Course Title:**Engineering Analysis & Design**
2. Contact Hours : L: 03,T: 00, P: 02
3. Examination Duration (Hrs.) : Theory: 03 Hrs., Practical: 00
4. Relative Weight age : CWS: 15, PRS: 25, MTE: 20, ETE: 40, PRE: 00
5. Credits : 04
6. Semester : First
7. Subject Area : DCC
8. Pre-requisite : NIL
9. Objective : To familiarize the students with the fundamental concepts of network analysis and synthesis of linear time invariant lumped electrical networks. The course is intended to lay a strong foundation for better understanding of the core Electronics & Communication Engineering subjects that follow in higher semesters.

10. Details of Course :

| S. No. | Contents | Contact Hours |
|---|---|---|
| 1. | Review of network elements: Linear versus nonlinear, passive verses active, time-variant and time invariant, causal and non-anticipated, stable and unstable networks, Network theorems: superposition, Thevenin 's and Norton's ,maximum power transfer, Wye-Delta transformation. | 06 |
| 2. | Network graph theory, notations and definitions, incidence matrix, cutsets and fundamental loops, fundamental cutsets matrix, Kirchoff voltage law, Kirchoff current low, interrelation ship between matrices of a graph, Tellegen's theorem and its application. | 06 |
| 3. | Analysis of linear time invariant networks, transform methods in circuit analysis, Laplace transform of common signals, concept of transformed impedance, network functions, poles and zeros, impulse response, step response, convolution. | 08 |
| 4. | Two-port network parameters: driving point and transfer functions. conversion, various interconnections, analysis using various two port parameters. | 06 |
| 5. | State equations for networks. State variable analysis of circuits, formulation of state equations, solution of state equations. Transient Response of RC, RL, RLC Circuits to various excitation signals such as step,ramp, impulse and sinusoidal excitations using Laplace Transform. Steady state sinusoidal analysis. | 08 |
| 6. | Passive /Active network synthesis, positive real functions, driving point synthesis(RC, RL, LC ),Introduction to passive filters. | 08 |
| | **Total** | **42** |

11. Suggested Books:

| S. No. | Name of Books/Authors/Publisher |
|---|---|
| 1 | "Network Analysis" by M.E. Van Valkenburg, Prentice Hall |
| 2 | "Fundamentals of Network Analysis & Synthesis" by Behrouz Peikari; Jaico Publishing house. |
| 3 | "Network Analysis & Synthesis" by F.F.Kuo; John Wiley & Sons Inc |
| 4 | "Engineering Circuit analysis" by Hyat Jr. & Kemmerly, McGraw Hill |

1. Subject Code: **CHU-101** : Course Title:**Communication Skills**
2. Contact Hours : L: 02,T: 00, P: 00
3. Examination Duration (Hrs.) : 03 Hrs.
4. Relative Weight age : CWS: 25, PRS: 00, MTE: 25, ETE: 50, PRE: 00
5. Credits : 02
6. Semester : First
7. Subject Area : DCC
8. Pre-requisite : NIL
9. Objective : To impart essential skills required for effective communication in English language.
10. Details of Course :

| Sl. No. | Contents | Contact Hours |
|---|---|---|
| 1 | **Communication**<br>E. Communication: Process, Features, Barriers<br>F. Language, Technology and Communication | 02 |
| 2 | **Unit II: Grammar and Usage**<br>G. Vocabulary-Words/Word Formation, Confusing Word Pairs<br>H. Sentence Construction, Sentence Types, Direct/Indirect Speech<br>I. Punctuation, Error Spotting, Idioms and Phrases | 06 |

| Sl. No. | Contents | Contact Hours |
|---|---|---|
| 3 | **Unit III: Oral Communication**<br>F. Phonetics of English, Vowels, Consonants, syllables, transcription of words and simple sentences using IPA: Speech Sounds and their articulation; phonemes, Syllable, Stress, Transcription of words and Simple Sentences<br>G. Language Lab Practice for Oral Communication: Project Presentations, Group Discussions, Debates, Interviews etc. | 12 |
| 4 | **Unit IV: Written Technical Communication**<br>G. Composition- Descriptive, Explanatory, Analytical and Argumentative<br>H. Writing Paragraphs ( Essay, Summary, Abstract)<br>I. Reading and Comprehension, Providing working mechanism of instruments, appliances, description of processes, their operations and descriptions; Drawing Inferences from graphs, charts, Diagrams etc. | 12 |
| 5 | **Unit V: Texts for Appreciation and Analysis**<br>G. Improve your Writing by V. N. Arora and Lakshmi Chandra (OUP)<br>H. Vijay Seshadri. *3 Sections* (2014) **or***Gestures: Poetry from SAARC Countries* Ed. K. Satchidanandan. Sahitya Akademi: New Delhi ISBN-81-260-0019-8<br>I. Ursula K. Leguin. *The Telling*, Harcourt Inc. 2000 **or**<br>*Animal Farm* by George Orwell (1945) ISBN: 9781502492791 **or**<br>*Frankenstein* by Mary Shelley (1818) Harper Collins India Ltd.: NOIDA ISBN: 9780007350964 | 10 |
| | **Total** | **42** |

**Text Books:**

| Sl. No. | Name of Books, Authors, Publishers | Year of Publication/Reprint |
|---|---|---|
| 1 | *Improve your Writing* by V.N.Arora and Lakshmi Chandra OUP: Delhi ISBN 13: 978-0-19-809608-5 | 1981, 2013 (Revised Edition) |
| 2 | *Technical Communication: Principles and Practice* by Meenakshi Raman and Sangeeta Sharma OUP: Delhi. ISBN-13: 9780-19-806529-6 | 2011, Reprinted in 2014 |
| 3 | *English Phonetics and Phonology: A Practical Course*. By Peter Roach. Cambridge: Cambridge University Press. (Fourth Edition) ISBN: 978-0-521-14921-1 | 2009, 2014 (Reprinted) |
| 4 | Vijay Seshadri. *3 Sections*, Harper Collins India Ltd.: India. ISBN: 9789351367734. **or** *Gestures: Poetry from SAARC Countries* Ed. K. Satchidanandan. Sahitya Akademi: New Delhi ISBN- 81-260-0019-8 | 2014 1996, Reprint 2007 |
| 5 | Ursula K. Leguin. *The Telling*, Harcourt Inc. 2000 **or** *Animal Farm* by George Orwell (1945) ISBN: 9781502492791 **or** *Frankenstein* by Mary Shelley (1818) Harper Collins India Ltd.: Noida ISBN: 9780007350964 | 2000 1945/ 2014 Reprint 1818/ Latest Reprint 2012 |

11. Suggested Books:

| Sl. No. | Name of Books, Authors, Publishers | Year of Publication/Reprint |
|---|---|---|
| 1 | Maison, Margaret M. ***Examine Your English.***. Orient Blackswan: Delhi, | 2009 |
| 2 | Sharma, Sangeeta & Binod Sharma. ***Communication Skills for Engineers & Scientists***, PHI. | 2012 |
| 3 | Swan, Michael, Catherine Walter. ***Oxford English Grammar Course****. OUP: Delhi,* | 2011 |

| Sl. No. | Name of Books, Authors, Publishers | Year of Publication/Reprint |
|---|---|---|
| 4 | Kumar, E Suresh & P Sreehari ***A Handbook for English Language Laboratories***, 2nd Edition, Cambridge University Press,Foundation Books, | 2014 |
| 5 | Dutt, P Kiranmai, Geetha Rajeevan & CLN Prakash ***A Course in Communication Skills***. *Cambridge University Press (*Foundation Books). | 2013 |
| 6 | Mitra, Barun K. ***Personality Development and Soft Skills***. OUP: Delhi. | 2011 |
| 7 | Apps for Phonetics- Advanced English Dictionary for Windows phone & OALD for Android phone | Latest |

1. Subject Code: **CEE-106** : Course Title:**Electro-Magnetics**
2. Contact Hours : L: 03,T: 01, P: 00
3. Examination Duration (Hrs.) : 03 Hrs.
4. Relative Weight age : CWS: 25, PRS: 00, MTE: 25, ETE: 50, PRE: 00
5. Credits : 04
6. Semester : Second
7. Subject Area : AEC
8. Pre-requisite : NIL
9. Objective : To familiarize the students with the concepts of basic electromagnetic theory.

10. Details of Course :

| S. No. | Contents | Contact Hours |
|---|---|---|
| 1 | **Vector Analysis:** Coordinate systems and Transformations – Cartesian, Circular and Spherical coordinates and Transformations. Vector Calculus – Differential length, Area and Volume; Line, Surface and Volume Integrals; Del Operator, Gradient of a Scalar, Divergence of a vector and Divergence theorem, Curl of a vector and Stokes theorem, Classification of vector fields. | 04 |
| 2 | **Electrostatics:** Coulomb's law and field intensity, Electric fields due to continuous charge distributions, Electric flux density, Gauss's law and its applications, Electric Potential, Relationship between E and V, Electric dipoles and flux lines, Energy density in Electrostatic fields; Electric fields in material space – Properties of materials, Convection and conduction currents, Conductors, Polarization in Dielectrics, Dielectric constant and strength, Linear, Isotropic and Homogeneous Dielectrics, Continuity equations and Relaxation time, Electric Boundary conditions; Electrostatic Boundary value problems – Poisson's and Laplace equations, Uniqueness theorem, Resistance and capacitance, Method of images. | 10 |
| 3 | **Magnetostatics:** Magnetostatic fields – Biot savart's law, Ampere's circuit law and its applications, Magnetic flux density, Maxwell's equations for static EM fields, Magnetic scalar and vector potentials, Magnetic Forces, Materials and Devices – Forces due to magnetic fields, Magnetic torque and moment, Magnetic dipole, Magnetization in materials, Classifications of magnetic materials, Magnetic boundary conditions, Inductors and Inductances, Magnetic energy | 06 |
| 4 | **Maxwell's Equation:** Faraday's law, Transformer and motional EMFs, Displacement current, Maxwell equations in final forms, Time varying potentials, Time-Harmonic Fields. | 04 |
| 5 | **Electromagnetic Wave Propagation:** Waves in general, Wave propagation in lossy dielectrics, Plane waves in lossless dielectrics, Plane waves in free space, Plane waves in good conductors, Power and Poynting vector, Reflection of a plane wave at normal and oblique incidence. | 08 |

| S. No. | Contents | Contact Hours |
|---|---|---|
| 6 | **Transmission Lines:** Transmission line parameters and equations; Input impedance, SWR, and Power; Smith Chart, Some applications of Transmission lines, Transients on transmission lines, Microstrip transmission lines.<br>**Waveguides:** Rectangular waveguides, Transverse Magnetic modes, Transverse Electric modes, Wave propagation in the guide, Power transmission and attenuation, Waveguide current and mode excitation, Waveguide resonators. Application in Non Destructive Testing. | 10 |
| | **Total** | **42** |

11. Suggested Books :

| S. No. | Name of Authors /Books / Publishers |
|---|---|
| 1 | Elements of Electromagnetics by M. N. O. Sadiku, Oxford University Press (India). |
| 2 | Engineering Electromagnetics by Hayt and Buck, TMH. |
| 3 | Fields and Waves in Communications Electronics by Ramo, Whinnery and Van Duzer, John Wiley & Sons. |
| 4 | Field and Wave Electromagnetics by David K Cheng, Pearson Education (India). |

1. Subject Code: **CEC-102** : Course Title:**Digital Design – I**
2. Contact Hours : L: 03,T: 00, P: 02
3. Examination Duration (Hrs.) : Theory:03 Hrs., Practical: 00
4. Relative Weight age : CWS: 15, PRS: 25, MTE: 20, ETE: 40, PRE: 00
5. Credits : 04
6. Semester : Second
7. Subject Area : DCC
8. Pre-requisite : NIL
9. Objective : To familiarize the students with the fundamental concepts of digital design including Boolean algebra, flip-flops, registers, semiconductor memories, ADC, DAC etc.

10. Details of Course :

| S. No. | Contents | Contact Hours |
|---|---|---|
| 1. | Introduction to Number Systems and Codes. Switching properties of Diodes, BJT and FET, Logic gates, DTL, TTL, ECL, I2L, CMOS Gates and their parameters and comparisons, Applications of switching transistors in bi-stable, mono-stable, astable and Schmitt trigger circuits. | 06 |
| 2. | Boolean algebra, Switching Function, minimization of switching function: Karnaugh map method and Tabulation Method don't care terms and applications w.r.to code converters and Digital Comparators, etc. | 06 |
| 3. | Gated Flip Flops, Master Slave Flip Flop, Ripple and Parallel Counter, Up-Down Counter, Shift Registers and Ring Counter, designing the combinational circuits of the counters through Excitation Table. | 08 |
| 4. | Introduction to the circuits for Arithmetic UNIT: Serial and parallel Binary Adders, 2's compliment and principle of subtraction, Carry-Look Ahead Adder, and BCD adder: Principles of multiplication, division in ALU | 06 |
| 5. | Semiconductor memories: ROM, PROM, EPROM, EEPROM, Bipolar RAM, static and dynamic RAM. Encoder and Decoder/ Demultiplexer, multiplexer, Designing combinational circuits with multiplexer, ROM and PLA. Introduction to advanced memory concepts. | 08 |
| 6. | Analog-to-Digital conversion:, dual slope integration method and voltage to frequency conversion, principal of DVM., counter type, successive approximation type, Flash ADC , D-A converter: weighted resistors type, R-2-R ladder type. | 08 |
| | **Total** | **42** |

11. Suggested Books :

| S. No. | Name of Books/Authors/Publisher |
|---|---|
| 1 | Digital Integrated Electronics by H. Taub & D. Schilling (TMH). |
| 2 | Digital Principles and Application by Malvino & Leach (TMH). |
| 3 | Digital Electronics And Logic Design by M. Mano (PHI). |
| 7 | Switching And Finite Automata Theory by Z. Kohavi (TMH). |
| 8 | Modern Digital Electronics by R. P. Jain (TMH). |
| 9 | Digital Electronics by Gothman (PHI). |

1. Subject Code: **CEC-101** : Course Title:**Signals & Systems**
2. Contact Hours : L: 03,T: 00, P: 02
3. Examination Duration (Hrs.) : Theory:03 Hrs., Practical: 00
4. Relative Weight age : CWS: 15, PRS: 25, MTE: 20, ETE: 40, PRE: 00
5. Credits : 04
6. Semester : EVEN-II
7. Subject Area : DCC
8. Pre-requisite : NIL
9. Objective : To familiarize the students with the fundamental concepts of signals and Systems including LTI, CTFT, DFT, Laplace Transform, Z-Transform etc.

10. Details of Course :

| S. No. | Contents | Contact Hours |
|---|---|---|
| 1. | Introduction of signals and systems; classification of signal, continuous time and discrete time signals, operations performed on them, even and odd signals, periodic and non periodic signals, deterministic and random signals, energy signals, power signals, elementary signals; impulse, UNIT step, ramp and exponentials, classification of systems. Properties of Systems; linearity, causality, stability, linear time-invariant (LTI) systems, convolution integral for continuous-time systems, convolution sum for discrete time systems, properties of linear time-invariant systems, system described by differential and difference equations. | 08 |
| 2. | Fourier series representation of periodic signals: Representation of periodic signals by trigonometric and exponential series, properties of continuous time Fourier series, discrete time Fourier series and its properties, continuous and discrete time filtering. | 06 |
| 3. | **Continuous time Fourier transform:** Definition of Fourier transform and its inverse, properties of the transform, common transform pairs, convolution and multiplication theorems.<br>**Discrete time Fourier transform:** Definition and properties, Convolution theorem, frequency response corresponding to difference equations. | 08 |
| 4. | **Laplace Transform:** Definition, region of convergence, properties, analysis of LTI systems, solution of differential equations, system functions, poles and zeros, stability.<br>**Z-Transform:** Definition, region of convergence, inversion, basic properties, solution of difference equations, system functions, poles and zeros and stability. | 08 |
| 5. | **Discrete Fourier transform:** Properties of discrete Fourier transform, relation between discrete Fourier transform, Z and Laplace transform. Convolution of sequences, circular convolution theorem, overlap add and overlap save methods of convolution.<br>**Sampling:** Uniform sampling, sampling theorem, aliasing, decimation, interpolation. | 08 |
| 6. | **Mathematical background:** Representation of signals using ortho-normal basis functions.. Power and Energy spectral density. Correlation functions. Hilbert transform and its properties. Pre-envelope and complex envelope. Band pass signals and Band pass systems. | 04 |
| | **Total** | **42** |

11. Suggested Books :

| S.No. | Name of Books/Authors/Publisher |
|---|---|
| 1. | Signals & Systems by Oppenheim, Willsky and Nawab, Pearson, PHI |
| 2. | Signal & systems by Simon Haykins; PHI |
| 3. | Fundamentals of Signal & Systems using the Web and Matlab, By Kamen : Pearson |
| 4. | Linear systems and signals by B.P.Lathi, Oxford Publication |
| 5. | Fundamentals of signals and systems, by Roberts, TMH |
| 6. | Digital Signal Processing, by Proakis : Pearson. |

1. Subject Code: **CMG-102** : Course Title:**Fundamentals of Management**

2. Contact Hours : L: 03,T: 00, P: 00

3. Examination Duration (Hrs.) : Theory:03 Hrs., Practical: 00

4. Relative Weight age : CWS: 25, PRS: 00, MTE: 25, ETE: 50, PRE: 00

5. Credits : 03

6. Semester : Third (ME+CE+EC+EE)

7. Subject Area : HMC

8. Pre-requisite : NIL

9. Objective : The basic objective of this paper is to acquaint the students with the basic concepts of management necessary to deal with emerging business environment besides sensitizing them about societal challenges.

10. Details of Course :

| Unit No. | Contents | Contact Hrs. |
|---|---|---|
| 1 | Definition of management, importance of management, management principals, managerial roles, managerial ethos, management vs administration, managerial functions, task and responsibilities, organizational structure, motivation: meaning, theories and techniques | 08 |
| 2 | Concept of business environment, corporate social responsibility and corporate governance, managerial values and ethics | 08 |
| 3 | Objectives and importance of financial management, basics of capital budgeting, cost of capital, emerging sources of funds for new projects, introduction to stock market | 09 |
| 4 | Functions of marketing, marketing vs sales, interface of marketing with other departments, customer life time value, new product development, unethical issues in marketing | 08 |
| 5 | Introduction to knowledge management, knowledge society, knowledge economy, building knowledge assets, sources of knowledge, technology innovation process, E-governance: definition, objectives and significance; challenges in Indian context, Digital India programme | 09 |
| | **Total** | **42** |

11. Suggested Books:

| S. No. | Name of Books / Authors/ Publishers | Year of Publication/Reprint |
|---|---|---|
| 1 | Fundamental of Management, Stephen P. Robbins, David A. De Cenzo and Mary Coulter, Pearson Education, ISBN-978-0273755869 | 2011 |
| 2 | Financial Accounting, 4 ed, S.N. Maheshwari and S.K. Maheshwari, Vikas Pulication, ISBN- 8125918523 | 2005 |
| 3 | Management, James A F Stonner, Pearson Education,ISBN - 9788131707043 | 2010 |
| 4 | Marketing Management, 14th ed., Philip Kotler , Kevin Lane Keller, Abraham Koshy and Mithileswar Jha, Pearson Education, New Delhi, (ISBN-10: 9788131767160) | 2013 |
| 5 | Knowledge Management in Organizations: A Critical Introduction, Donald Hislop, Oxford University Press, ISBN: 9780199691937. | 2013 |

# DEPARTMENT OF ELECTRICAL ENGINEERING

## BACHELOR OF TECHNOLOGY (EVENING) ELECTRICAL ENGINEERING

### Syllabus for First Year B. Tech. (Evening) Electrical Engineering

1. Subject Code: **CMA-101** : Course Title:**Engineering Mathematics**
2. Contact Hours : L: 03,T: 01, P: 00
3. Examination Duration (Hrs.) : Theory:03 Hrs., Practical: 00
4. Relative Weight age : CWS: 15, PRS: 25, MTE: 20, ETE: 40, PRE: 00
5. Credits : 04
6. Semester : First
7. Subject Area : AEC
8. Pre-requisite : Mathematics
9. Objective : To familiarize the students with the various numerical and engineering optimization methods.
10. Details of Course :

| S.No. | Contents | Contact Hours |
|---|---|---|
| 1. | **Laplace Transforms:** Basic properties, Laplace transform of derivatives and integrals, Inverse Laplace transform, Differentiation and Integration of Laplace transform, Laplace transform solution of IVP | 06 |
| 2. | **Fourier series:** Fourier series, Dirichlet conditions, Even and odd functions, half range series, expansion in arbitrary period. | 06 |
| 3. | **Matrices:** Rank of matrix, inverse of a matrix using elementary transformations, consistency of linear system of equations; Eigen-values and eigenvectors of a matrix. | 06 |
| 4. | **Calculus:** Maclaurin's and Taylor's Theorem for expansion of a function. Applications of definite integral to area, arc length, surface area and volume (in Cartesian co-ordinates). Partial derivatives, total differential, Euler's Theorem, Maxima-Minima. | 06 |
| 5. | **Multiple Integrals**: Double integral (Cartesian co-ordinates), change of order of integration, triple integrals (Cartesian co-ordinates), Applications in area and volume. | 06 |

| S.No. | Contents | Contact Hours |
|---|---|---|
| 6. | **Ordinary differential equations:** Linear differential equations with constant coefficients. | 06 |
| 7. | **Numerial Techniques:** Solution of algebraic and transcendental equations: Newton Raphson's methods, Solution of simultaneous equations; Gauss Elimination method and Gauss Seidel method, Numerical Integration: Simpson's 1/3 rule. Solution of Ordinary differential equations: Runge-Kutta method of 4th order. | 06 |
| **Note:** ***Solution of problems using MATLAB.*** | | |
| | **Total** | 42 |

## 11. Suggested Books:

| S. No. | Name of Books / Authors/ Publishers | Year of Publication/ Reprint |
|---|---|---|
| 1. | Advanced engineering mathematics vol.1 & 2:H.C. Taneja ; I K international | 2010 |
| 2. | Numerical Methods in Engineering and Science, B. S. Grewal, Khanna Publisher. | 2003 |
| 3. | Advanced engineering mathematics: Jain&Iyenger; Narosa. | 2009 |

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|---|---|---|---|
| 1. | Subject Code: **CEE-101** | : | Course Title:**Network Analysis and Synthesis** |
| 2. | Contact Hours | : | L: 03,T: 01, P: 00 |
| 3. | Examination Duration (Hrs.) | : | Theory:03 Hrs., Practical: 00 |
| 4. | Relative Weight age | : | CWS: 15, PRS: 15, MTE: 30, ETE: 40, PRE: 00 |
| 5. | Credits | : | 04 |
| 6. | Semester | : | First |
| 7. | Subject Area | : | DCC |
| 8. | Pre-requisite | : | NIL |
| 9. | Objective | : | To familiarize the students with the concepts of network analysis. |

10. Details of Course :

| S. No. | Contents | Contact Hours |
|---|---|---|
| 1 | **Introduction:** Introduction to continuous and discrete signals, their classification and types, periodic waveforms and signal synthesis, Fourier representation of continuous time periodic and aperiodic signals, LTI systems and their properties; system modeling in terms of differential equations and transient response of R, L, C circuits for impulse, step, ramp, sinusoidal and exponential signals. | 06 |
| 2 | **Network Topology and Graph Theory:** Introductory concepts of network graphs, cut sets, loops, cut set and loop analysis | 06 |
| 3 | **Network Theorems:** Superposition, Thevenin's theorem, Norton's theorem, maximum power transfer theorem, reciprocity theorem, Miller's theorem | 10 |
| 4 | **Laplace Transform:** Review of properties and applications of Laplace transform of complex waveform and transient response of R- L- C series, parallel, series-parallel circuits for all kinds of excitations | 10 |
| 5 | **Two Port Networks and Elements of Realizability:**z, y, h, g, ABCD, inverse ABCD parameters, their inter conversion, interconnection of two 2-port networks, concept of transform impedance. Positive real functions; definition & properties, Foster's I and II, Cauer's I and II forms, Synthesis of LC, RC, RL Networks, image parameters and basics of two-port synthesis | 10 |
| | **Total** | **42** |

## 11. Suggested Books:

| S. No. | Name of Books / Authors/ Publishers | Year of Publication/ Reprint |
|---|---|---|
| 1 | M.E. Van Valkenburg, "Network Analysis", PHI | 2000 |
| 2 | Decarlo & Lin "Linear circuit Analysis: Time Domain, Phasor, and Laplace Transform Approaches", Oxford | 2001 |
| 3 | F.F. Kuo, "Network Analysis and Synthesis", John Wiley and Sons | 2006 |
| 4 | Hayt, Kemmerly & Durbin, "Engineering Circuit Analysis", Tata McGraw Hill Publishing Company Ltd | 2007 |
| 5 | Desoer and Kuh, "Basic Circuit Theory", McGraw Hill International | 2009 |

1. Subject Code: **CEE-103** : Course Title:**Engineering Analysis and Design**
2. Contact Hours : L: 03,T: 00, P: 02
3. Examination Duration (Hrs.) : Theory:03 Hrs., Practical: 00
4. Relative Weight age : CWS: 15, PRS: 25, MTE: 20, ETE: 40, PRE: 00
5. Credits : 04
6. Semester : First
7. Subject Area : DCC
8. Pre-requisite : NIL
9. Objective : To introduce fundamentals of design and simulation using software packages.
10. Details of Course :

| S. No. | Contents | Contact Hours |
|---|---|---|
| 1. | **Introduction:** Introduction to various electrical components, bread board, PCB, identification of capacitors, testing of capacitors, charging and discharging, verification of KCL and KVL, measurement of unknown resistance | 06 |
| 2. | **Wiring, Cables and basic circuits design:** Standard wire gauge, identification and types of cables, sizing of conductor, design of test board/ extension boards, domestic wiring, bed case and stair case wiring etc. | 08 |
| 3. | **Measurement and Instrumentation:** Introduction to various measuring instruments,digital storage oscilloscope, Current transformer and potential transformer, megger and HV tester, power measurement in single phase and three phase circuits, energy consumption of in different loads, calibration of meters, range extension of ammeter and voltmeter. | 10 |
| 4. | **Machines and Protection:** Introduction to DC machines, study of various parts of DC machines, Induction machines, synchronous machines, BLDC motor etc. | 8 |
| 5. | **Electronics Circuits Design:** Study of PN diode, Transistor (BJT, FET, MOSFET), Thyristor, design of half wave and full wave rectifier circuits, SMPS, introduction to software's related to circuit design | 10 |
| | **Total** | **42** |

**11. Suggested Books:**

| S. No. | Name of Books / Authors/ Publishers | Year of Publication/ Reprint |
|---|---|---|
| 1. | Biran A. and Breiner M., "MATLAB 5 for Engineers", 2nd edition, Addison Wesley. | 1999 |
| 2. | Rashid M. H. and Rashid H. M., "SPICE for Power Electronics and Electric Power", 2nd edition, Taylor & Francis. | 2009 |
| 3. | William J. P., "Introduction to MATLAB for Engineers", 3rd edition, McGraw Hill. | 2010 |
| 4. | Software Manuals | |

| | | | |
|---|---|---|---|
| 1. | Subject Code: **CHU-101** | : | Course Title:**Communication Skills** |
| 2. | Contact Hours | : | L: 02,T: 00, P: 00 |
| 3. | Examination Duration (Hrs.) | : | 03 Hrs. |
| 4. | Relative Weight age | : | CWS: 25, PRS: 00, MTE: 25, ETE: 40, PRE: 50 |
| 5. | Credits | : | 02 |
| 6. | Semester | : | First |
| 7. | Subject Area | : | HMC |
| 8. | Pre-requisite | : | NIL |
| 9. | Objective | : | To impart essential skills required for effective communication in English language. |

10. Details of Course :

| S. No. | Contents | Contact Hours |
|---|---|---|
| 1 | **Communication**<br>Communication: Process, Features, Barriers<br>Language, Technology and Communication | 02 |
| 2 | **Unit II: Grammar and Usage**<br>Vocabulary-Words/Word Formation, Confusing Word Pairs<br>Sentence Construction, Sentence Types, Direct/Indirect Speech<br>Punctuation, Error Spotting, Idioms and Phrases | 06 |
| 3 | **Unit III: Oral Communication**<br>Phonetics of English, Vowels, Consonants, syllables, transcription of words and simple sentences using IPA: Speech Sounds and their articulation; phonemes, Syllable, Stress, Transcription of words and Simple Sentences<br>Language Lab Practice for Oral Communication: Project Presentations, Group Discussions, Debates, Interviews etc. | 12 |
| 4 | **Unit IV: Written Technical Communication**<br>Composition- Descriptive, Explanatory, Analytical and Argumentative<br>Writing Paragraphs ( Essay, Summary, Abstract)<br>Reading and Comprehension, Providing working mechanism of instruments, appliances, description of processes, their operations and descriptions; Drawing Inferences from graphs, charts, Diagrams etc. | 12 |
| 5 | **Unit V: Texts for Appreciation and Analysis**<br>Improve your Writing by V. N. Arora and Lakshmi Chandra (OUP)<br>Vijay Seshadri. *3 Sections* (2014) **or***Gestures: Poetry from SAARC Countries* Ed. K. Satchidanandan. Sahitya Akademi: New Delhi ISBN-81-260-0019-8<br>Ursula K. Leguin. *The Telling*, Harcourt Inc. 2000 **or**<br>*Animal Farm* by George Orwell (1945) ISBN: 9781502492791 **or**<br>*Frankenstein* by Mary Shelley (1818) Harper Collins India Ltd.: NOIDA ISBN: 9780007350964 | 10 |
| | **Total** | **42** |

**Text Books:**

| S. No. | Name of Books / Authors/ Publishers | Year of Publication/Reprint |
|---|---|---|
| 1 | *Improve your Writing* by V.N.Arora and Lakshmi Chandra OUP: Delhi ISBN 13: 978-0-19-809608-5 | 1981, 2013 (Revised Edition) |
| 2 | *Technical Communication: Principles and Practice* by Meenakshi Raman and Sangeeta Sharma OUP: Delhi. ISBN-13: 9780-19-806529-6 | 2011, Reprinted in 2014 |
| 3 | *English Phonetics and Phonology: A Practical Course*. By Peter Roach. Cambridge: Cambridge University Press. (Fourth Edition) ISBN: 978-0-521-14921-1 | 2009, 2014 (Reprinted) |
| 4 | Vijay Seshadri. *3 Sections*, Harper Collins India Ltd.: India. ISBN: 9789351367734. **or** *Gestures: Poetry from SAARC Countries* Ed. K. Satchidanandan. Sahitya Akademi: New Delhi ISBN- 81-260-0019-8 | 2014<br>1996, Reprint 2007 |
| 5 | Ursula K. Leguin. *The Telling*, Harcourt Inc. 2000 **or** *Animal Farm* by George Orwell (1945) ISBN: 9781502492791 **or** *Frankenstein* by Mary Shelley (1818) Harper Collins India Ltd.: Noida ISBN: 9780007350964 | 2000<br>1945/ 2014 Reprint<br>1818/ Latest Reprint 2012 |

**11. Suggested Books:**

| S. No. | Name of Books / Authors/ Publishers | Year of Publication/Reprint |
|---|---|---|
| 1 | Maison, Margaret M. ***Examine Your English*.** Orient Blackswan: Delhi, | 2009 |
| 2 | Sharma, Sangeeta & Binod Sharma. ***Communication Skills for Engineers & Scientists***, PHI. | 2012 |
| 3 | Swan, Michael, Catherine Walter. ***Oxford English Grammar Course****. OUP: Delhi,* | 2011 |
| 4 | Kumar, E Suresh & P Sreehari ***A Handbook for English Language Laboratories***, 2nd Edition, Cambridge University Press,Foundation Books, | 2014 |
| 5 | Dutt, P Kiranmai, Geetha Rajeevan & CLN Prakash ***A Course in Communication Skills****. Cambridge University Press (*Foundation Books). | 2013 |
| 6 | Mitra, Barun K. ***Personality Development and Soft Skills***. OUP: Delhi. | 2011 |
| 7 | Apps for Phonetics- Advanced English Dictionary for Windows phone & OALD for Android phone | Latest |

1. Subject Code: **CEC-102** : Course Title:**Electronic Devices & Circuits**
2. Contact Hours : L: 03,T: 00, P: 02
3. Examination Duration (Hrs.) : Theory:03 Hrs., Practical: 00
4. Relative Weight age : CWS: 15, PRS: 25, MTE: 20, ETE: 40, PRE: 00
5. Credits : 04
6. Semester : Second
7. Subject Area : AEC
8. Pre-requisite : EE-101, EE-103
9. Objective : To introduce the fundamentals of electronic devices and circuits.
10. Details of Course :

| S. No. | Contents | Contact Hours |
|---|---|---|
| 1. | Introduction to Electronics Signals, frequency spectrum of signals, analog and digital signals, amplifiers, circuit models of amplifiers, frequency response, digital logic inverters. Diodes; Ideal diodes, physical operation and terminal characteristics, small signal models, operation in reverse breakdown region, Zener diode, rectifier circuits, limiting and clamping circuits etc. | 08 |
| 2. | **Bipolar Junction Transistors:** Physical structure and modes of operation, symbols, operation in active mode, graphical representation of transistor characteristics, DC analysis of transistor circuits, transistor as an amplifier and small signal model, transistor biasing, CE, CC and CB amplifier configurations, transistor as switch, large signal model of the transistor. | 08 |
| 3. | **MOSFETs and Field Effect Transistors:** Structure and physical operation of enhancement type MOSFET, current-voltage characteristics, depletion type MOSFET, MOSFET as an amplifier, basic single stage MOSFET amplifiers, all NMOS amplifier stages, JFETs, etc. Differential and Multistage Amplifiers: BJT differential pair, small signal model and operation, differential amplifiers with active loads, MOS differential amplifiers, multistage amplifiers, etc. | 10 |
| 4. | **Frequency Response:** Low frequency response of CE and CS amplifier, high frequency response of CS and CE amplifier, CB, CC and cascade configurations and their frequency response, frequency response of CC-CE cascade. | 8 |
| 5. | **Feedback amplifiers and Oscillators:** Principles of feedback in amplifiers, advantages of negative feedback, effect of feedback on impedances, Nyquist criterion for stability, Barkhausen criterion for sinusoidal oscillators, phase shift oscillator, Wien-bridge oscillator, resonant circuit oscillators, crystal oscillators, frequency stability. | 8 |
| | **Total** | **42** |

**11. Suggested Books:**

| S. No. | Name of Books / Authors/ Publishers | Year of Publication/Reprint |
|---|---|---|
| 1. | Microelectronic Circuits, Sedra A. S. and Smith K. C, Oxford university Press, 5th Edition | |
| 2. | Electronic Devices & Circuit Theory Robert L Boylestad Louis Nashelsky, PHI | 2001 |
| 3. | Electronic Devices and Circuits,Jacob. Millman, Christos C.Halkias, Tata McGraw Hill Publishing Limited, New Delhi, | 2003 |
| 4. | Electronic Devices and Circuits, David A.Bell, Prentice Hall of India Private Limited, New Delhi. | 2003 |

| | | | |
|---|---|---|---|
| 1. | Subject Code: **CEE-102** | : | Course Title:**Electromechanical Energy Conversion and Transformer** |
| 2. | Contact Hours | : | L: 03,T: 00, P: 02 |
| 3. | Examination Duration (Hrs.) | : | Theory:03 Hrs., Practical: 00 |
| 4. | Relative Weight age | : | CWS: 15, PRS: 25, MTE: 20, ETE: 40, PRE: 00 |
| 5. | Credits | : | 04 |
| 6. | Semester | : | Second |
| 7. | Subject Area | : | DCC |
| 8. | Pre-requisite | : | EE-101, EE-103 |
| 9. | Objective | : | To familiarize the students with the construction and operation of dc machines in motoring and generating modes and operation of single-phase and three-phase transformers. |

10. Details of Course :

| S. No. | Contents | Contact Hours |
|---|---|---|
| 1. | **Principle of Electromechanical Energy Conversion:** Energy stored in electric and magnetic fields, energy conversion in single and multi-excited systems and torque production, reluctance torque; Reluctance and hysteresis motors. | 04 |
| 2. | **General Description of Electrical Machines:** Constructional details of dc and ac machines, description of magnetic and electric circuits in cylindrical rotor and salient pole machines, mmf distribution of current carrying single and multiple coils; Armature winding as a current sheet, associated mmf and flux density waves; Harmonic analysis of induced voltage; Torque as a function of flux and mmf. | 06 |
| 3. | **DC Machines:** Simplex lap and wave windings, emf and torque equations, interaction of the fields produced by field and armature circuits. | |
| 4. | **Commutation**: Causes of bad commutation, methods of improving commutation, effect of brush shifts; Compensating winding; Interpole winding. | 04 |
| 5. | **DC Generators**: Methods of excitation, shunt, series and compound generators, characteristics, testing. | 04 |
| 6. | **DC Motors**: Methods of excitation, characteristics, starting and speed control methods; Losses and their estimation, efficiency. | 06 |
| 7. | **Single-phase Transformers**: Principle of operation, equivalent circuit, voltage regulation and efficiency; Parallel operation. | 04 |
| 8. | **Three-phase Transformers**: Various connections and their comparative features, harmonics in emf and magnetizing current, effect of connections and construction on harmonics; Parallel operation of three-phase transformers, sharing of load, 3-phase to 2-phase conversion, 3-phase to 6-phase conversion. | 06 |
| 9. | **Autotransformers:** Principle of operation and comparison with two winding transformer | 03 |
| | **Total** | **42** |

11. Suggested Books:

| S. No. | Name of Books / Authors/ Publishers | Year of Publication / Reprint |
|---|---|---|
| 1. | Fitzgerald A. E., Kingsley C. and Kusko A., "Electric Machinery", 6th Ed., McGraw-Hill International Book Company. | 2008 |
| 2. | Say M. G., "The Performance and Design of Alternating Current Machines", CBS Publishers and Distributors. | 2005 |
| 3. | Say M. G. and Taylor E. O., "Direct Current Machines", 3rd Ed., ELBS and Pitman. | 1986 |
| 4. | Nagrath I. J. and Kothari D. P., "Electrical Machines", 3rd Ed., Tata McGraw-Hill Publishing Company Limited. | 2008 |
| 5. | Clayton A. E. and Hancock N., "The Performance and Design of DC Machines", CBS Publishers and Distributors. | 2003 |
| 6. | Langsdorf A. S., "Theory of AC Machines", 2nd Ed., Tata McGraw-Hill Publishing Company Limited. | 2008 |

| | | | |
|---|---|---|---|
| 1. | Subject Code: **CEE-104** | : | Course Title:**Electromagnetic Field Theory** |
| 2. | Contact Hours | : | L: 03,T: 01, P: 00 |
| 3. | Examination Duration (Hrs.) | : | Theory:03 Hrs., Practical: 00 |
| 4. | Relative Weight age | : | CWS: 25, PRS: 00, MTE: 25, ETE: 50, PRE: 00 |
| 5. | Credits | : | 04 |
| 6. | Semester | : | Second |
| 7. | Subject Area | : | DCC |
| 8. | Pre-requisite | : | EE-101, EE-103 |
| 9. | Objective | : | To deepen the understanding of Electromagnetic Theory by building on the concepts learnt in Engineering Physics and Basic Electrical Engineering and application of vector integral and differential calculus for solving abstract electromagnetic problems. |

10. Details of Course :

| S. No. | Contents | Contact Hours |
|---|---|---|
| 1. | **Mathematical Orientation:** Over view of Electromagnetic, Electrostatics, Magnetostatics, Electromagnetic field, Maxwell's equations, wave equation and Electromagnetic wave propagation. Review of scalars, vectors, vector multiplication- dot and vector products, component of a vector, Co-ordinate system- Cartesian, cylindrical and spherical co-ordinate system. Transformation of different co-ordinate system, cylindrical to Cartesian, spherical to Cartesian, cylindrical to spherical and vice versa. Gradient, Curl and Divergence. Divergence theorem, Stroke's theorem. Line integrals, Surface integrals, Volume integrals. Significance of line integral, surface integral and volume integrals. Differential length, area and volume in Cartesian, cylindrical and spherical co-ordinate system. Dirac- Delta function. | 06 |
| 2. | **Electrostatic Fields:** Overview of electrostatic field, Coulomb's Law and field intensity. Electric fields due to point charge, continuous charge distributions like line charge, surface charge and volume charge distributions. Electric flux density, Gauss's Law. Application of Gauss's law - Point charge, Infinite line charge, Infinite sheet of charge and uniformly charged sphere. Electric potential, Relationship between E and V - Maxwell's equation. Scalar potential. Electric Dipole, Electric field intensity due to electric dipole. Electric flux lines. Properties of Electric flux lines- flux lines due to point charge and dipole. Energy density in Electrostatic filed, Energy density. Classification, of materials based on conductivity-Conductors, Dielectric, Semi conductors. Convection and Conduction currents and current densities. Conductors, Point form of Ohm's law. Polarization in Dielectric. Effect of Polarization in Dielectric on flux density(D). Polar and Non-Polar Dielectric, linear, homogeneous, isotropic Dielectric. Dielectric constant and strength in Dielectric material, Continuity equation of current and Relaxation time. Electrostatic Boundary conditions - Dielectric- Dielectric, Conductor- Dielectric, Conductor- Free Space. Boundary value problems. Poisson's and Laplace's equations, Uniqueness Theorem.General procedure for solving Poisson's and Laplace's equations. Resistance and capacitance, Capacitance of parallel plate capacitor, coaxial cable, Spherical capacitor. The method of images used for finding V, E, D and r due to charges in the presence of conductors. Image theory- A point charge above a grounded conducting plane. Image theory- A line charge above a grounded conducting plane. | 13 |

| S. No. | Contents | Contact Hours |
|---|---|---|
| 3. | **Magnetostatic Fields :** Introduction to magnetostatic fields, Biot- Savart's law. Numerical. Ampere's circuit law- Maxwell's equation. Application of Ampere' law - Infinite Line current, Infinite Sheet of current, Infinitely long co-axial Transmission line.Magnetic flux density. Maxwell's equation for static EM fields . Magnetic scalar and vector potentials. Biot- Savart's Law and Ampere's law. Forces due to magnetic fields - Force on a charged particle, Force on a current element and Force between two current elements. Magnetic Torque and Moment, Magnetic Dipole. Magnetization in materials- M vector, Classification of magnetic materials. Magnetic boundary conditions. Inductance for simple geometry. Magnetic energy, magnetic circuits. Statement and Interpretation of Maxwell's equation. | 13 |
| 4. | **Time Dependent Fields:** General introduction, Faraday's Law. Transformer and motional emf - stationary loop in time varying B field (Transformer emf), Moving loop in static B field (Motional emf). Moving loop in time varying fields, Displacement current. Maxwell's equation in final forms, Time varying Potentials. Time harmonic fields. Introduction of Electromagnetic wave propagation, waves in general, wave propagation in lossy dielectric. Plane waves in loss less Dielectric, Plane waves in free space, Plane waves in good conductors. Power and Poynting vector. Reflection of Plane wave at normal incidence. Reflection of Plane wave at Oblique incidence - Parallel Polarization and Perpendicular Polarization. | 10 |
| | Total | 42 |

## 11. Suggested Books:

| S. No. | Name of Books / Authors/ Publishers | Year of Publication / Reprint |
|---|---|---|
| 1. | Matthew N. O. Sadiku, "Elements of Electromagnetics", Oxford University Press | 2014 |
| 2. | William H. Hyat, "Engineering Electromagnetics", Mc Graw-Hill Int. Edition | 8th Edition |
| 3. | Kraus and Fleisch, "Electromagnetics with Applications", Mc Graw-Hill Edition | 2010 |
| 4. | N. N. Rao, "Elements of Engineering Electromagnetics", Pearson Education | 6th Edition |

1. Subject Code: **CMG-102** : Course Title:**Fundamentals of Management**
2. Contact Hours : L: 03,T: 00, P: 00
3. Examination Duration (Hrs.) : Theory:03 Hrs., Practical: 00
4. Relative Weight age : CWS: 25, PRS: 00, MTE: 25, ETE: 50, PRE: 00
5. Credits : 03
6. Semester : Third (ME+CE+EC+EE)
7. Subject Area : HMC
8. Pre-requisite : NIL
9. Objective : The basic objective of this paper is to acquaint the students with the basic concepts of management necessary to deal with emerging business environment besides sensitizing them about societal challenges.
10. Details of Course :

| S. No. | Contents | Contact Hours |
|---|---|---|
| 1 | Definition of management, importance of management, management principals, managerial roles, managerial ethos, management vs administration, managerial functions, task and responsibilities, organizational structure, motivation: meaning, theories and techniques | 8 |
| 2 | Concept of business environment, corporate social responsibility and corporate governance, managerial values and ethics | 8 |
| 3 | Objectives and importance of financial management, basics of capital budgeting, cost of capital, emerging sources of funds for new projects, introduction to stock market | 9 |
| 4 | Functions of marketing, marketing vs sales, interface of marketing with other departments, customer life time value, new product development, unethical issues in marketing | 8 |
| 5 | Introduction to knowledge management, knowledge society, knowledge economy, building knowledge assets, sources of knowledge, technology innovation process, E-governance: definition, objectives and significance; challenges in Indian context, Digital India programme | 9 |
| | **Total** | **42** |

## 11. Suggested Books:

| S. No. | Name of Books / Authors/ Publishers | Year of Publication / Reprint |
|---|---|---|
| 1 | Fundamental of Management, Stephen P. Robbins, David A. De Cenzo and Mary Coulter, Pearson Education, ISBN-978-0273755869 | 2011 |
| 2 | Financial Accounting, 4 ed, S.N. Maheshwari and S.K. Maheshwari, Vikas Pulication, ISBN- 8125918523 | 2005 |
| 3. | Management, James A F Stonner, Pearson Education,ISBN - 9788131707043 | 2010 |
| 4. | Marketing Management, 14th ed., Philip Kotler , Kevin Lane Keller, Abraham Koshy and Mithileswar Jha, Pearson Education, New Delhi, (ISBN-10: 9788131767160) | 2013 |
| 5 | Knowledge Management in Organizations: A Critical Introduction, Donald Hislop, Oxford University Press, ISBN: 9780199691937. | 2013 |

# DEPARTMENT OF MECHANICAL ENGINEERING

**BACHELOR OF TECHNOLOGY (EVENING)MECHANICAL ENGINEERING**

**Syllabus for First Year B. Tech. (Evening) Mechanical Engineering**

| | | | |
|---|---|---|---|
| 1. | Subject Code: **CEE-105** | : | Course Title:**Electrical Technology** |
| 2. | Contact Hours | : | L: 03,T: 00, P: 02 |
| 3. | Examination Duration (Hrs.) | : | Theory:03 Hrs., Practical: 00 |
| 4. | Relative Weight age | : | CWS: 15, PRS: 25, MTE: 20, ETE: 40, PRE: 00 |
| 5. | Credits | : | 04 |
| 6. | Semester | : | First |
| 7. | Subject Area | : | AEC |
| 8. | Pre-requisite | : | NIL |
| 9. | Objective | : | To familiarize the students with the concepts of electrical circuits, magnetic circuits, transformer and measuring instruments. |
| 10. | Details of Course | : | |

| S. No. | Contents | Contact Hours |
|---|---|---|
| 1 | **Introduction:** Kirchhoff's Laws, mesh and nodal analysis, star and delta transformation,superposition theorem, Thevenin's theorem, Norton's theorem, maximum power transfer theorem. | 10 |
| 2 | **Single Phase AC Circuits:** Single phase emf generation, average and effective values of sinusoids, complex representation of impedance, series and parallel circuits, concept of phasor, phasor diagram, power factor, complex power, real power, reactive power and apparent power, resonance in series and parallel circuits, Q-factor, bandwidth and their relationship, half power points. | 10 |
| 3 | **Transformers: S**ingle phase transformer – construction and principle of working, open and short circuit tests, efficiency, auto transformer and their applications. | 10 |

| S. No. | Contents | Contact Hours |
|---|---|---|
| 4 | **Induction Motor:** Single phase and three phase induction motors, starting methods, torque slip characteristics, efficiency. | 06 |
| 5 | **Measuring Instruments:** Analog indicating instruments, PMMC ammeters and voltmeters, damping in indicating instruments, shunt and multipliers, moving iron ammeter and voltmeters, dynamometer type instruments, multimeters, AC watt-hour meters. Digital voltmeters, ammeters and wattmeters, three phase power measurement by two wattmeter method. | 06 |
| | **Total** | **42** |

11. Suggested Books:

| S. No. | Name of Books / Authors/ Publishers | Year of Publication / Reprint |
|---|---|---|
| 1 | Basic Electrical Engineering, A.E. Fitzgerald, David Higginbotham , Arvin Grabel, Tata McGraw-Hill Publishing Company; 5th Edition. | 2009 |
| 2 | Electrical and Electronic Technology, Edward Hughes, Ian Mckenzie Smith, John Hiley, Pearson Education, 10th edition. | 2010 |
| 3 | Hayt, Kemmerly & Durbin, “Engineering Circuit Analysis”, Tata McGraw Hill Publishing Company Ltd. | 2007 |
| 4 | Electrical Engineering Fundamental V. Del Toro, Prentice-Hall, 2nd Edition. | 1989 |
| 5 | Basic Electrical Engineering, C.L. Wadhwa,New Age International Pvt Ltd Publishers | 2007 |

1. Subject Code: **CME-101** : Course Title:**Metallurgy**
2. Contact Hours : L: 03,T: 00, P: 02
3. Examination Duration (Hrs.) : Theory:03 Hrs., Practical: 02
4. Relative Weight age : CWS: 15, PRS: 25, MTE: 20, ETE: 40, PRE: 00
5. Credits : 04
6. Semester : First
7. Subject Area : DCC
8. Pre-requisite : NIL

9. Objective : To familiarize the students with Structure of metal, Deformation, Fracture, Creep, Solidification, Heat Treatment, Materials, Corrosion, Fiber Reinforced Composites to enhance critical thinking and prepare him for facing design challenges.

10. Details of Course :

| S. No. | Contents | Contact Hours |
|---|---|---|
| 1 | **Structure of metal**: Crystal structure, miller indices, lattices, imperfections, elementary treatment of point and line defects and their relation to mechanical properties | 05 |
| 2 | **Deformation**: Slip, twinning, effect of cold and hot working on mechanical properties, principles of recovery, re-crystallization and grain growth. | 03 |
| 3 | **Fracture**: Fracture of metals and alloys, brittle and ductile, fracture, fatigue failure, effect of alloying elements, design consideration | 03 |
| 4 | **Creep**:Basic consideration in the selection of material for high and low temperature service, creep curve, effect of material variables on creep properties, brittle failure at low temperature. | 03 |
| 5 | **Solidification**: Phases in metal system, lever rule, solidification of metal and alloys, solid solution, eutectic, eutectoid and inter-metallic compounds, Iron carbon equilibrium diagram, TTT-diagram. | 03 |
| 6 | **Heat Treatment**: Principles and purpose of heat treatment of plain carbon steels, annealing, normalizing, hardening, tempering, isothermal treatment, case hardening – carburizing, nitridingetc, precipitating hardening of aluminum alloys. | 04 |
| 7 | **Materials**:PlainCarbon steels, effect of alloying elements, properties and uses, heat treatment of tool steels, stainless, spring and wear resisting steels. Production, composition, properties, and use of non-ferrous alloys e.g., brasses, bronzes, duralumin, die-casting and bearing alloys.IS standards codes for steels. | 06 |
| 8 | **Corrosion**: Types of corrosion, Galvanic cell, rusting of Iron, Methods of protection from corrosion. | 02 |
| 9 | **Fiber Reinforced Composites**: General characteristics, Applications, Introduction to Fibers – glass, carbon, Kevlar 49 fibers. Matrix – Polymeric, Metallic, Ceramic Matrix, Coupling agents and fillers. | 04 |

| S. No. | Contents | Contact Hours |
|---|---|---|
| 10 | **Introduction** to the practice and discipline of Nano- Science, Nano scale dimension, Nano science and engineering principles, Nano materials, carbon nano-tube technology and industrial applications. | 04 |
| 11 | Extraction of metals from sulphide ores and concentrates using bio-hydro metallurgical processes. The biological and chemical principles of bioleaching/bio-oxidation processes. Bacteria used in these processes and their characteristics, bacterial leaching mechanism, the parameters affecting bioleaching/bio-oxidation processes and process design. | 05 |
| | **Total** | **42** |

## 11. Suggested Books:

| S. No. | Name of Books / Authors/ Publishers | Year of Publication / Reprint |
|---|---|---|
| 1 | Material Science &Engineering,V.Raghavan Prentice Hall India Ltd | 2001 |
| 2 | Material Science Processes, R.B. Gupta, Satya Prakashan, New Delhi, | 2000 |
| 3 | Materials & Processes in Manufacture, Degarmo E. Paul et.al Prentice Hall India, New Delhi. | 2001 |
| 4 | Engineering Metallurgy Part 1,Raymond A Higgim., Prentice Hall India, New Delhi. | 1998 |
| 5. | Principles of Engineering Metallurgy, L. Krishna Reddy, New Age Publication, New Delhi. | 2001 |
| 6. | Engineering Materials & Properties,.Buduisky et al, " Prentice Hall India, New Delhi | 2004 |
| 7. | Physical Metallurgy, Peter Haasten, Cambridge Univ. Press. | 1996 |

1. Subject Code: **CME-103** : Course Title:**Engineering Analysis and Design**
2. Contact Hours : L: 03,T: 00, P: 02
3. Examination Duration (Hrs.) : Theory:03 Hrs., Practical: 02
4. Relative Weight age : CWS: 15, PRS: 25, MTE: 20, ETE: 40, PRE: 00
5. Credits : 04

6. Semester : First

7. Subject Area : DCC

8. Pre-requisite : NIL

9. Objective : To familiarize the students with the process of design and analysis of engineering systems and to enhance critical thinking and prepare him for facing design challenges. To familiarize him with statistical, decision making and optimization tools.

10. Details of Course :

| S. No. | Contents | Contact Hours |
|---|---|---|
| | **PART A** | |
| 1 | **Introduction:** Design, Specification of design objectives and constraints, Different phases of design process. | 1 |
| 2 | **System modeling:** Modelling of multi-energy systems like mechanical, electrical, hydraulic, thermal etc. | 4 |
| 3 | **Engineering Analysis**: Role of analysis, Design spiral, Computer Aided Engineering Analysis, Introduction to FEM softwares and simulation tools, Visualization, Iterative process in design, Analysis and testing of design projects, Instrumentation. | 4 |
| 4 | **Learning from failure**: Types of failure, Failure of machine components, Famous case studies of failure, e.g., Liberty ships, Comet aircraft, Challenger space shuttle etc. | 2 |
| 5 | **Engineering Design**: Projects for design of machine elements. | 5 |
| 6 | **Communication of Technical information:** written and oral presentation, posters, report writing. | 1 |
| 7 | Engineering Ethics, Social responsibility, Sustainable design, Environmental issues | 1 |
| | **PART B** | |
| 8 | Statistics: Introduction, Role of statistics in design and management, measures of central tendency and dispersion, kurtosis. | 2 |

| S. No. | Contents | Contact Hours |
|---|---|---|
| 9 | Probability: Introduction, Relevance of probability for failure analysis, jointly distributed random variables, distributions- continuous and discrete, Sampling distributions | 5 |
| 10 | Hypothesis testing: Estimation and hypothesis testing, Parametric tests, t-test, chi-square test, correlation and regression analysis, Application of statistical packages. | 5 |
| 11 | Optimization: Optimal design, Linear programming, Solution through graphical and Simplex methods, | 8 |
| 12 | Decision theory: Decision making, Decision tree. Use of OR software packages. | 4 |
| | **Total** | **42** |

11. Suggested Books:

| S. No. | Name of Authors /Books / Publishers | Year of Publication/ Reprint |
|---|---|---|
| | **TEXT BOOKS:** | |
| 1 | J L Yowell and D W Carlson, Eds., Introductory Engineering Design: A Projects-Based Approach, Third Edition | 2011 |
| 2 | A H Burr and J B Cheatham, Mechanical Analysis and Design, 2nd Ed., Prentice Hall | 1997 |
| 3 | J R Dixon, Design Engineering: Inventiveness, Analysis and Decision Making, TMH, New Delhi | 1980 |
| 4. | Budynas-Nisbett, Shigley's Mechanical Engineering Design, Eighth Edition | 2006 |
| 5. | Mike W Martin, Roland Schinzinger, Ethics in Engineering. McGraw-Hill 4th Edition | 2004 |
| 6. | Quantitative Methods, J K Sharma, MacMillan Publishers. | |
| 7. | Quantitative Methods for Business, Anderson, Cengage Learning | |
| 8. | Business statistics, Bajpai, Pearson India | |

Practical on SPSS, TORA, LINDO : statistical and Operations research software

1. Subject Code: **CHU-101** : Course Title: **Communication Skills**
2. Contact Hours : L: 02,T: 00, P: 00
3. Examination Duration (Hrs.) : Theory:03 Hrs.
4. Relative Weight age : CWS: 25, PRS: 00, MTE: 25, ETE: 50, PRE: 00
5. Credits : 02
6. Semester : First
7. Subject Area : HMC
8. Pre-requisite : NIL
9. Objective : To impart essential skills required for effective communication in English language.
10. Details of Course :

| Sl. No. | Contents | Contact Hours |
|---|---|---|
| 1 | **Communication**<br>I. Communication: Process, Features, Barriers<br>J. Language, Technology and Communication | 02 |
| 2 | **Unit II: Grammar and Usage**<br>M. Vocabulary-Words/Word Formation, Confusing Word Pairs<br>N. Sentence Construction, Sentence Types, Direct/Indirect Speech<br>O. Punctuation, Error Spotting, Idioms and Phrases | 06 |
| 3 | Unit III: Oral Communication<br>J. Phonetics of English, Vowels, Consonants, syllables, transcription of words and simple sentences using IPA: Speech Sounds and their articulation; phonemes, Syllable, Stress, Transcription of words and Simple Sentences<br>K. Language Lab Practice for Oral Communication: Project Presentations, Group Discussions, Debates, Interviews etc. | 12 |

| Sl. No. | Contents | Contact Hours |
|---|---|---|
| 4 | Unit IV: Written Technical Communication<br>M. Composition- Descriptive, Explanatory, Analytical and Argumentative<br>N. Writing Paragraphs ( Essay, Summary, Abstract)<br>O. Reading and Comprehension, Providing working mechanism of instruments, appliances, description of processes, their operations and descriptions; Drawing Inferences from graphs, charts, Diagrams etc. | 12 |
| 5 | **Unit V: Texts for Appreciation and Analysis**<br>M. Improve your Writing by V. N. Arora and Lakshmi Chandra (OUP)<br>N. Vijay Seshadri. *3 Sections* (2014) **or***Gestures: Poetry from SAARC Countries* Ed. K. Satchidanandan. Sahitya Akademi: New Delhi ISBN- 81-260-0019-8<br>O. Ursula K. Leguin. *The Telling*, Harcourt Inc. 2000 **or**<br>*Animal Farm* by George Orwell (1945) ISBN: 9781502492791 **or**<br>*Frankenstein* by Mary Shelley (1818) Harper Collins India Ltd.: NOIDA ISBN: 9780007350964 | 10 |
| | Total | 42 |

**Text Books:**

| Sl. No. | Name of Books, Authors, Publishers | Year of Publication/ Reprint |
|---|---|---|
| 1 | *Improve your Writing* by V.N.Arora and Lakshmi Chandra OUP: Delhi ISBN 13: 978-0-19-809608-5 | 1981, 2013 (Revised Edition) |
| 2 | *Technical Communication: Principles and Practice* by Meenakshi Raman and Sangeeta Sharma OUP: Delhi. ISBN-13: 9780-19-806529-6 | 2011, Reprinted in 2014 |
| 3 | *English Phonetics and Phonology: A Practical Course*. By Peter Roach. Cambridge: Cambridge University Press. (Fourth Edition) ISBN: 978-0-521-14921-1 | 2009, 2014 (Reprinted) |
| 4 | Vijay Seshadri. *3 Sections*, Harper Collins India Ltd.: India. ISBN: 9789351367734. **or**<br>*Gestures: Poetry from SAARC Countries* Ed. K. Satchidanandan. Sahitya Akademi: New Delhi ISBN- 81-260-0019-8 | 2014<br><br>1996, Reprint 2007 |
| 5 | Ursula K. Leguin. *The Telling*, Harcourt Inc. 2000 **or**<br>*Animal Farm* by George Orwell (1945) ISBN: 9781502492791 **or**<br>*Frankenstein* by Mary Shelley (1818) Harper Collins India Ltd.: NoidaISBN: 9780007350964 | 2000<br>1945/ 2014 Reprint<br>1818/ Latest Reprint 2012 |

**11. Suggested Books:**

| Sl. No. | Name of Books, Authors, Publishers | Year of Publication/Reprint |
|---|---|---|
| 1 | Maison, Margaret M. ***Examine Your English.***. Orient Blackswan: Delhi, | 2009 |
| 2 | Sharma, Sangeeta & Binod Sharma. ***Communication Skills for Engineers & Scientists***, PHI. | 2012 |
| 3 | Swan, Michael, Catherine Walter. ***Oxford English Grammar Course****. OUP: Delhi,* | 2011 |
| 4 | Kumar, E Suresh & P Sreehari ***A Handbook for English Language Laboratories***, 2nd Edition, Cambridge University Press,Foundation Books, | 2014 |
| 5 | Dutt, P Kiranmai, Geetha Rajeevan & CLN Prakash ***A Course in Communication Skills****. Cambridge University Press (*Foundation Books). | 2013 |
| 6 | Mitra, Barun K. ***Personality Development and Soft Skills***. OUP: Delhi. | 2011 |
| 7 | Apps for Phonetics- Advanced English Dictionary for Windows phone & OALD for Android phone | Latest |

| | | | |
|---|---|---|---|
| 1. | Subject Code: **CEC-106** | : | Course Title:**Electronics** |
| 2. | Contact Hours | : | L: 03,T: 00, P: 02 |
| 3. | Examination Duration (Hrs.) | : | Theory:03 Hrs., Practical : 00 |
| 4. | Relative Weight age | : | CWS: 15, PRS: 25, MTE: 20, ETE: 40, PRE: 00 |
| 5. | Credits | : | 04 |
| 6. | Semester | : | First |
| 7. | Subject Area | : | AEC |
| 8. | Pre-requisite | : | NIL |
| 9. | Objective | : | To familiarize the students with the concepts of basic analog and digital electronics. |
| 10. | Details of Course | : | |

| S. No. | Contents | Contact Hours |
|---|---|---|
| 1 | **Introduction to semiconductor physics:**Classification of materials (conductors,insulators and semiconductor) Intrinsic and extrinsic semiconductors and their conductivities, mass action law, drift and diffusion currents | 04 |
| 2 | **p-n Junction diode:**Physical operation, diode current equation and I-V characteristic and piecewise linear model,concept of load line, introduction of depletion and diffusion capacitances, small signal model, Breakdown in p-n diodes, Zener diode.Diode Applications: Rectifiers Zener regulators, clipping and clamping circuits | 07 |
| 3 | **Bipolar Junction Transistor(BJT):**Physical structure and modes of operation, BJT current components, BJT characteristics,large-signal equivalent circuit and concept of load line, small-signal equivalent.Basic single- stage BJT amplifier configurations(CE,CB,CC) | 08 |
| 4 | Concept of Feedback Amplifiers, Oscillators, Power Amplifiers(Class A and Class B),operational Amplifier and basic applications. | 09 |
| 5 | Introduction to digital circuits: Digital and analog signals, number systems, Boolean algebra, Logic Gates, minimization of switching function: Karnaugh map method | 06 |
| 6 | Binary adder, subtractor, muliplexer and decoder, flip flops, Counter Shift Registers | 08 |
| | **Total** | **42** |

11. Suggested Books:

| S. No. | Name of Authors /Books / Publishers |
|---|---|
| 1 | Electronic Devices and Circuit Theory by Robert L. Boylestad and Louis Nashelsky, Pearson |
| 2 | Electronic s analog and Digital by I.J.Nagrath |
| 3 | Microelectronics by Millman and Grabel; Tata McGraw Hill |
| 4 | Modern Digital Electronics by R. P. Jain (TMH). |

1. Subject Code: **CME-102** : Course Title:**Strength of Materials**
2. Contact Hours : L: 03,T: 00, P: 02
3. Examination Duration (Hrs.) : Theory:03 Hrs., Practical : 00
4. Relative Weight age : CWS: 15, PRS: 25, MTE: 20, ETE: 40, PRE: 00

5. Credits : 04
6. Semester : Second
7. Subject Area : DCC
8. Pre-requisite : NIL
9. Objective : To familiarize the student with the Concept of Simple stresses and Strains, Strain Energy, Compound stresses, Bending, Theory of failure, Slope and deflection. Application of simple stresses and bending stresses. Enhance critical thinking and prepare him for facing design challenges. To familiarize him with stress analysis, decision making.

10. Details of Course :

| S. No. | Contents | Contact Hours |
|---|---|---|
| 1 | **Simple stresses and strains**: Concept of stress and strain; stress and strain diagram, Hooke's law, Young's modulus, Poison ratio, stress at a point, stress and strains in bars subjected to axial loading. Modulus of elasticity, stress produced in compound bars subject to axial loading. Temperature stress and strain calculations due to applications of axial loads and variation of temperature in single and compound walls. | 05 |
| 2 | **Strain Energy**: Strain Energy under due to axial loads, stresses due to sudden and impact loads | 02 |
| 3 | **Compound stress and strains**: The **two dimensional system**; stress at a point on a plane, principal stresses and principal planes; Mohr's circle of stresses. | 02 |
| 4 | **Bending**: bending theory, derivation of bending formula: its application to beam of rectangular, circular and channel sections. | 03 |
| 5 | **3D Stress, Theory of failure,Strain energy, Impact load** : Concept of three dimensional stress and strain, Stress tensor, three stress invariants, St. Vernants principle,Generalized hooks law, Theory of failures, Strain energy in torsion and bending, Castigliano Theorem. | 05 |
| 6 | **Torsion**: Derivation of torsion equation and its assumptions. Applications of the equation of the hollow and solid circular shafts torsional rigidity. principal stresses and maximum shear stresses under combined loading of bending and torsion | 03 |
| 7 | **Springs**: - Deflection of springs, Close-coiled helical springs subjected to axial load and axial twist, spiral and leaf springs under torque and Moment. | 03 |

| S. No. | Contents | Contact Hours |
|---|---|---|
| 8 | **Slope and deflection**: Relationship between moment, slope and deflection, Mohr's theorem; Moment area method; method of integration; Macaulay's method: Use of all these methods to calculate slope and deflection for the following :<br>a) Cantilevers<br>b) Simply supported beams with and without overhang.<br>c) Under concentrated loads, uniformly distributed loads **or** Combination of concentrated and uniformly distributed loads. | 05 |
| 9 | **Columns and struts**: Columns of different end conditions and failure of columns, Euler's formulas; Rankine-Gordon's formula, Johnson's empirical formula for axially loaded columns and their applications. | 04 |
| 10 | **Cylinders and spheres**: Thin Cylinders and spheres; Derivation of formulae and calculation of hoop stress, longitudinal stress in a thin cylinder and sphere subjected to internal pressure. | 03 |
| 11 | **Thick cylinders**: Hoop , radial and longitudinal stresses in thick cylinders due to internal and external pressure, Compound cylinders ,Stresses in shrink fits. | 04 |
| 12 | Rotating disc of uniform thickness, disc of variable thickness, Rotating shaft and cylinders. | 03 |
| | **Total** | **42** |

## 11. Suggested Books:

| S. No. | Name of Authors /Books / Publishers | Year of Publication/ Reprint |
|---|---|---|
| 1 | "Engg. Mechanics of solids", Popov Eger P., Prentice Hall, New Delhi | 1998 |
| 2 | "Strength of Materials",SriNath L.S. et.al., McMillan, New Delhi. | 2001 |
| 3 | "Strength of Materials",Sadhu Singh, Khanna Publishers, New Delhi. | 2000 |
| 4. | "Elements of Strength of Materials",Timoshenko S.P., East-West affiliated, New Delhi. | 2000 |
| 5. | "Mechanics of Materials", Hibbler R.C Prentice Hall, New Delhi, 1994. | 2008 |
| 6. | "Mechanics of Solids", Fenner, Roger.T U.K. B.C. Publication, New Delhi. | 1990 |
| 7 | Mechanics of materials by James M. Gere | |

1. Subject Code: **CME-104** : Course Title:**Fluid Mechanics and Machines**
2. Contact Hours : L: 03,T: 00, P: 02
3. Examination Duration (Hrs.) : Theory:03 Hrs., Practical : 00
4. Relative Weight age : CWS: 15, PRS: 25, MTE: 20, ETE: 40, PRE: 00
5. Credits : 04
6. Semester : Second
7. Subject Area : DCC
8. Pre-requisite : NIL
9. Objective : To familiarize the students with the concept of Fluid and flow processes, Fluid Statics, Fluid kinematics and Dynamics, Dimensional analysis, Viscous flow, Turbulent flow, Laminar and Turbulent Boundary Layer flows and Miscellaneous Hydraulic Machines to enhance critical thinking and prepare him for facing design challenges.
10. Details of Course :

| S. No. | Contents | Contact Hours |
|---|---|---|
| 1 | **Introduction:** Fluid and flow definition and types, continuum, fluid properties. | 03 |
| 2 | **Fluid Statics:** Pressure variation in a static fluid; hydrostatic manometry; forces on planes and curved surfaces, stability of submerged and floating bodies. | 03 |
| 3 | **Fluid kinematics**: General description of fluid motion, steady flow, uniform flow; stream, streak and path lines; Lagrangian and Eulerian approach; Continuity equation, particle acceleration; rotational and irrotational flow; stream function; velocity potential function, flow nets; circulation; simple flows; source, sink, vortex, doublet, free and forced vortex. | 04 |

| S. No. | Contents | Contact Hours |
|---|---|---|
| 4 | **Fluid Dynamics:** Concept of system and control volume; Reynold's transport theorem, Euler;s equation, Bernoulii's equation, Navier stokes' equation; Flow measurement- Venturimeter, Orfice meter, Pitot- tube, flow meters, notches. | 04 |
| 5 | **Dimensional analysis:** Buckingham's $\pi$ - Theorem. Non-dimensional parameters, similarity and its application to fluid problems. | 03 |
| 6 | **Viscous flow:** Laminar flow between parallel surfaces and through circular pipes, Momentum and Kinetic energy correction factors; power absorbed in viscous resistance, film lubrication. | 03 |
| 7 | **Turbulent flow:** Transition from laminar to turbulent flow, turbulence and turbulence intensity, turbulence modeling, Prandil mixing length hypothesis; flow losses in pipes- major and minor losses, pipes in series and parallel, hydraulically smooth and smooth and rough pipes, friction factor charts. | 03 |
| 8 | **Laminar and Turbulent Boundary Layer flows**: Boundary layer concept, boundary layer thickness, displacement, momentum and energy thickness. Momentum integral equation; drag on flat plate. Boundary separation. Flow around immersed bodies- drag and lift. | 04 |
| 9 | **Water Turbines:** Classification; Pelton, Francis, propeller and Kaplan turbines; Velocity triangles, efficiency, draft tubes, governing. | 04 |
| 10 | **Pumps:** Centrifugal pumps; velocity triangles, efficiency, turbine pumps, axial and mixed flow pumps, positive displacement pumps; reciprocating, gear and wave pumps. | 05 |
| 11 | **Miscellaneous Hydraulic Machines:** Accumulators, intensifiers, presses, cranes, fluid coupling, torque converter. Hydraulic and Pneumatic Power: Simple Hydraulic circuits, hydraulic control valves, Pneumatic power. | 06 |
| | **Total** | **42** |

11. Suggested Books:

| S. No. | Name of Authors /Books / Publishers | Year of Publication/Reprint |
|---|---|---|
| 1 | Introduction to Fluid Mechanics and Fluid Machines, Som. S. K &Biswas. G. Tata McGraw-Hills Publishing Company Limited | 2003 |
| 2 | Fluid Mechanics, Cengel&Cimbala, Tata McGraw-Hills Publishing Company Limited | 2006 |
| 3 | Fluid Mechanics, White.F.M, Tata McGraw-Hill Publishing Company Limited. | 2008 |
| 4. | Fluid Mechanics & Machinery Agarwal.S.K, Tata McGraw-Hill Publishing Company Limited. | |
| 5. | Fluid Mechanics & Fluid Power Engineering, Dr. D.S. Kumar, S.K. Kataria& Sons | 2008 |
| 6. | A Text Book of Fluid Mechanics & Hydraulic Machines, Bansal. Dr.R.K, Laxmi Publications(P) Ltd., New Delhi. | |

1. Subject Code: **CMG-102** : Course Title: **Fundamentals of Management**
2. Contact Hours : L: 03,T: 00, P: 00
3. Examination Duration (ETE) : Theory: 03 Hrs., Practical : 00
4. Relative Weight age : CWS: 25, PRS: 00, MTE: 25, ETE: 50, PRE: 00
5. Credits : 03
6. Semester : Third (ME+CE+EC+EE)
7. Subject Area : HMC
8. Pre-requisite : NIL
9. Objective : The basic objective of this paper is to acquaint the students with the basic concepts of management necessary to deal with emerging business environment besides sensitizing them about societal challenges.

10. Details of Course :

| Unit No. | Detail Contents | Contact Hrs. |
|---|---|---|
| 1 | Definition of management, importance of management, management principals, managerial roles, managerial ethos, management vs administration, managerial functions, task and responsibilities, organizational structure, motivation: meaning, theories and techniques | 08 |
| 2 | Concept of business environment, corporate social responsibility and corporate governance, managerial values and ethics | 08 |
| 3 | Objectives and importance of financial management, basics of capital budgeting, cost of capital, emerging sources of funds for new projects, introduction to stock market | 09 |
| 4 | Functions of marketing, marketing vs sales, interface of marketing with other departments, customer life time value, new product development, unethical issues in marketing | 08 |
| 5 | Introduction to knowledge management, knowledge society, knowledge economy, building knowledge assets, sources of knowledge, technology innovation process, E-governance: definition, objectives and significance; challenges in Indian context, Digital India programme | 09 |
| | **Total** | **42** |

11. Suggested Books:

| S. No. | Name of Books / Authors/ Publishers | Year of Publication/Reprint |
|---|---|---|
| 1 | Fundamental of Management, Stephen P. Robbins, David A. De Cenzo and Mary Coulter, Pearson Education, ISBN- 978-0273755869 | 2011 |
| 2 | Financial Accounting, 4 ed, S.N. Maheshwari and S.K. Maheshwari, Vikas Pulication, ISBN- 8125918523 | 2005 |
| 3 | Management, James A F Stonner, Pearson Education, ISBN - 9788131707043 | 2010 |
| 4 | Marketing Management, 14th ed., Philip Kotler, Kevin Lane Keller, Abraham Koshy and Mithileswar Jha, Pearson Education, New Delhi, (ISBN-10: 9788131767160) | 2013 |
| 5 | Knowledge Management in Organizations: A Critical Introduction, Donald Hislop, Oxford University Press, ISBN: 9780199691937. | 2013 |

# DEPARTMENT OF TRAINING AND PLACEMENT

The Department of Training and Placement is the backbone of any institute. From the very beginning, Delhi Technological University (Formerly Delhi College of Engineering) has laid greater emphasis on industrial training and corporate exposure. To strengthen this, the students are introduced to industrial practices through multiple summer and winter training programs in the industry as well as research institutions.

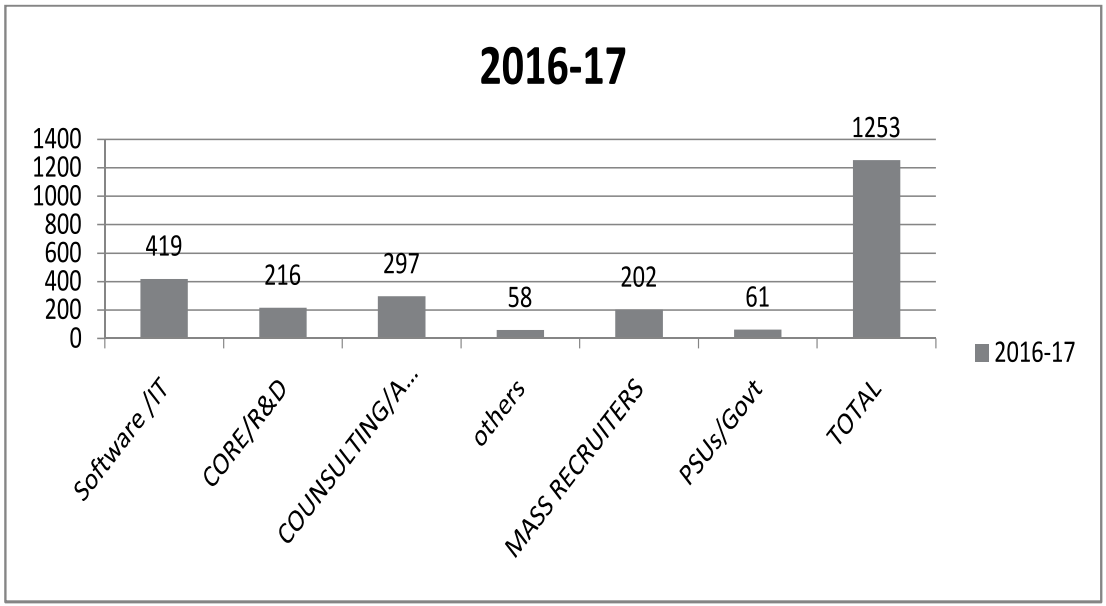
The demand for University's graduates has always been very high and in the recent years it has increased exponentially. Large numbers of students have been accepted by several foreign companies in all continents for summer and winter Training with financial assistance.

Employment of the students has always been University's major concern. The consistent placement records of the students are an indicative factor that the University is having very fruitful and meaningful relations with the corporate world.

Campus placement of graduating students DTU has always been exemplary. A large number of leading industries and organizations visit the campus each year for campus placement. The highest International salary has reached to its peak at 1.27 Cr L.P.A by UBER while the highest domestic salary has reached 38 L.P.A. BY ADOBE. The companies which visited DTU in recent years includes all major MNCs including Microsoft, Google, Facebook, Bank of America, Mckinsey, JP Morgan, Nvidia, Qualcomm etc and India's leading companies like Tata Steel, Tata Motors, Samsung, L&T and major PSUs like Indian Navy, Indian Air Force, NTPC, BPCL, IOCL,BEL, IGL and GAIL, etc. The Graduates have also received excellent higher educational opportunities in world class Universities such as Oxford, Cambridge, MIT, Harvard, Stanford, Georgia Tech, and Carnegie Mellon. DTU has surpassed the benchmark of its past achievements now that it has freedom to excel.

Further, international professional societies like SME, IEEE, SAE, IET, SPIE and Indian societies like ASME, SCEE, CSI, SITE, SSE and DEPTH maintain an active presence at Delhi Technological University, lending knowledge, experience and opportunity to the students. Seminars and symposiums are regularly held, allowing or exchange of ideas, exposure to new developments and serving as avenues for paper-presentation. Through these societies, students of Delhi Technological University regularly participate in various competitions at the international level bringing further laurels to the institution.

For the benefit of students, regular training programs, both in technical as well as in soft skills, in collaboration with industry are also organized. Initiatives are taken to train the students for Group Discussion and Interview. DTU lays great emphasis on being tech savvy and this has resulted in development of excellent infrastructural facilities for recruiters and at the same time automation of the process of placements.



# DELHI SCHOOL OF MANAGEMENT

Delhi Technological University, well known for its excellence in the engineering disciplines, established its Business school - Delhi School of Management (DSM) in the year 2009. DSM is supported with state-of-the-art DTU infrastructure including hostels, guest houses for visiting experts, serene ambience to pursue learning, smart classrooms, computing labs, databases and well-stocked library.

The school runs a two year full time regular MBA program and a two year weekend MBA (Executive) program. The school is also extending support to various engineering departments of DTU for imparting management education to the budding engineers.

DSM provides immense opportunities for students to emerge as globally competitive future managers and leaders through its innovative and corporate needs oriented academic programs, the strength of its faculty and support services, and the range of student activities. Careful selection of students from all over India having consistent good academic record and aptitude for management ensures that the classrooms are lively, and that each student gets a challenging, competitive, and cosmopolitan atmosphere.

The curriculum is designed to meet the requirements of the present day technology intensive business functions. The students are equipped with management knowledge to deal with complex, global and dynamic business environment. The course structure comprises four semesters that are taught over a period of two years. In the first year, the students are oriented with the fundamentals of HR, Finance, Marketing, Micro and Macro Economics along with the various aspects of business like Corporate Law, Operations, Supply Chain, IT, Knowledge Technology, etc. The second year offers plethora of opportunities wherein students can choose two specialization papers (one from technical specification and other from functional specification) from six avenues that are offered with four courses per specializations along with core papers like Strategic Management, Corporate Governance, Project Management, International Business Environment and one foreign language.

DSM also gives ample exposure to students through case-studies, course projects, and industry internships. The emphasis is on the right combination of classroom learning, hands-on experience in the corporate world and sharing the rich experience of the practitioners. In order to provide students with the required exposure, DSM

brings them in close contact with the industry executives and eminent academicians through a series of lectures, sponsoring students to conferences and seminars, and facilitating their participation in papers/ case studies competitions. The students also get focused soft-skills training to enable their true inner qualities to shine through.

The various student societies of DSM provide a vibrant environment for the students by organizing events such as Marketing Quiz, Finance Quiz, Debate, Sports Quiz and various events like Cricket Premier League, Football Premier League, and Basketball Premier League by Sports Club. As in the previous years, DSM was action packed with various events featuring visiting experts from industry/academia, workshops, symposium, panel discussions peppered with student activities like B- plan Competition, National Seminar and the annual management Conclave.

To allow the students to gain on the job training and apply the classroom knowledge, an 8-week summer internship is an integral part of the curriculum. Further to make this internship effective and result oriented, every student is attached with a faculty mentor from DSM. The role of the mentor is to help the student in preparing internship schedule, identify the project, design and execute the study, e.g. data collection, data analysis and finally prepare a high quality report.

With an ideal mix of fresh and experienced candidates, the school offered one of the best talent pools for recruiters. This translated into companies from a variety of sectors showing interest in our placements. Some of the prominent recruiters were KPMG, TCS, UFLEX, Hyundai, PrintVenue, Google, Ernst and Young, KPMG Global, The Porter, IndiaMart, Godrej, Cavin Kare, Capital IQ, MARKIT and Wazir Advisors offering varied profiles to candidates such as Analyst, Marketing Strategy, Operations, Account Optimiser, Consultant, etc. Other elite profiles offered were Management Trainee, Associate Consultant, Assistant Manager, Assistant Sales Manager, Business Analyst, Project Manager, Relationship Manager and Product Manager.

MBA (Executive) program started by DSM in 2013-14 has been highly popular amongst the working Executives. It has provides an opportunity for DSM to expand its reach by targeting young Executives from both Private and Public Sector.

The School also admits scholars for the PhD program in areas like Information Technology Management, Knowledge and Innovation Management, E-Governance, Financial Management, Supply Chain Management, Human Resource Management and Marketing Management.

# University School of Management & Entrepreneurship (East Delhi Campus)

This academic session marks the beginning of plethora of opportunities for students aspiring to pursue management studies and Economics from Delhi Technological University with DTU broadening its horizons and extending its outreach to East Delhi with its newly established University School of Management and Entrepreneurship at Vivek Vihar, Phase 2, Jhilmil Colony. The newly established East Campus of DTU endeavours to provide quality education and fosters the culture of research, innovations in the emerging areas of management relevant to industry and society.

Keeping in pace with the growing emphasis on skill development and entrepreneurship, DTU is all set and committed to hone the skills of the students by offering prestigious academic courses viz. BBA, BA(H) Economics and MBA

About the programmes at East Delhi Campus:

BBA: To provide adequate basic understanding about Management Education among the students and to prepare students to understand the business environment, this programme aims at holistic development of the students. The three years programme is structured in 6 semesters and has 120 seats.

BA (H) Economics: The course aims at providing in depth knowledge of Economics to the students. The programme is designed as per the varying interests and career ambitions in the emerging areas of economics. The three years programme is structured in 6 semesters and has 120 seats.

MBA: This course envisages at developing distinctive future managers by providing excellent world class education. With the vision of inculcating a penchant for innovation, research and experimentation, M.BA at DTU aims at developing future managers. The two years programme is structured in 4 semesters and has 60 seats.

# SECTION-E

## INFRATRUCTURE & FACILITIES

- Estate
- NSS
- Computer Centre
- Library
- Hostels
- Canteen & Shopping Plaza
- Health Centre

# ESTATE: EXISTING INFRASTRUCTURE

The erstwhile Delhi College of Engineering, situated in a crowded locality at a small campus at Kashmere Gate of Delhi, was shifted to its present campus at Bawana Road, Delhi – 110 042 in 1996-97. While the campus plot has a size of 163.87 acres, only a part of it was constructed in the first Phase of construction keeping in mind a target student population of 3,000 at that time. Broadly the approved area utilization norms were followed as under:

- Academic: 45% (73.23 Acres)
- Residential: 25% (40.68 Acres)
- Green/Open: 15% (24.41 Acres)
- Sports/Cultural: 15% (24.41 Acres)

Accordingly, the first phase of construction which was completed around 1997-98 comprised of a total built up area of 1,58,840.41 Sq. mtr with the break-up as follows:

- Academic Area 69,146.03 Sq. m.
- Hostel Area 50,607.40 Sq. m.
- Residential Area 39,086.98 Sq. m.

The details of existing infrastructure are as under:-

(a) Land 63.87 Acres (663154.03 sqm)

(b) The total space built –

(i) Residential and Hostel 89694.38 sqm

(ii) Academic blocks 69146.03 sqm

(c) The residential accommodation for faculty members and staff are as under :-

| Sl. No. | Type | No | Remarks |
|---|---|---|---|
| (a) | Type VI Residence | 1 | Vice Chancellor's Residence |
| (b) | Type V Residence | 56 | For Faculty and Senior officers |
| (c) | Type IV Residence | 60 | -do- |
| (d) | Type III Residences | 45 | For Non-Teaching Staff |
| (e) | Type II Residence | 105 | -do- |
| (f) | Type I Residence | 60 | -do- |
| | **Total** | **327** | -do- |

(d) Existing hostel accommodation:

| Sl. No. | Boys Hostel Name | Girls Hostel Name |
|---|---|---|
| **1** | VVS Boys Hostel | KCH Girls Hostel |
| **2** | JCB Boys Hostel | SNH Girls Hostel |
| **3** | VMH Boys Hostel | Type-III Block 1 Girls Hostel |
| **4** | CVR Boys Hostel | Type-III Block 2 Girls Hostel |
| **5** | BCH Boys Hostel | Type – II Block – 1 Girls Hostel |
| **6** | HJB Boys Hostel | Type – II Block –2,3, 4 Girls Hostel |
| **7** | Ramanujan Boys Hostel | Type – II B – 5, Boys Hostel |
| **8** | Aryabhatt Boys Hostel | 168 |
| **9** | Type – II B – 5, Boys Hostel | 24 |
| **Total Accommodation** | **1275** | **445** |
| **Grand Total** | **1720** | |

In addition to the above, 89 Boys and 256 Girls are also housed in the vacant staff quarters of Type I, Type II and Type III.

## DTU-NSS UNIT

*I slept and dreamt that life was joy.*
*I woke and saw that life was service.*
*I acted and behold, service was joy.*

The aim of NSS DTU Unit is to give an extended dimension to the higher education system and orient the students towards community service. Some poignant objectives of NSS DTU Unit include:

- To develop student's personality through community service
- To develop leadership qualities and democratic attitude and gain skills in mobilizing community participation.
- To identify practical solutions to problems of the community
- To develop a sense of social and civic responsibility
- To work towards building a beautiful world and spread message of environment, peace and education among today's youth.

The NSS unit has organized various activities including, Education-cum Health Camp at Govt. Senior Secondary School, Bawana, Tree Plantation Drive in association with Global Warming Reduction Centre followed by lecture series by eminent global reformers, Social InterhshipProgramme at PES NGO, during summer break, etc. Some volunteers also got chance to be mentored by British Council to train underprivileged for spoken English under the "Teach India Programme" initiated by the Times of India. NSS DTU also organized a Drug Awareness Colloquium where eminent physicians from AIIMS, Delhi enlightened the young minds. Women's Self Defense Workshop in partnership with Delhi Police and PES, participation in the Swachh Bharat Abhiyan, visits to orphanage comprises other activities. The annual NSS Special Camp, was

held in the village Shikarpur, U.P. from December 25th 2014 to January Ist 2015 where the volunteers minutely understood the grievances of the rural India, set up a Solar-Lamp lit Library, mobilized the villagers about the hygiene and cleanliness and organized various other events.

The motto of NSS – “Not Me, but you” reflects the essence of democratic living and upholds the need for selfless service and appreciation of the other person’s point of view and also to show consideration for fellow human beings. It underlines that the welfare of an individual is ultimately dependent on the welfare of society as the whole. One may connect with NSS DTU Unit at www.facebook.com/NSSDelTech.

# COMPUTER CENTRE

DTU has a well equipped centralized computer center to cater to the needs of high profile students and faculty in the University. It is housed, in a magnificent state-of-the-art building having specialized laboratories to provide variety of platforms and computing environment for UG, PG and Research students.

The center possesses HP ML370 , ML570 standalone servers & DL360 rack servers, Dell blade servers (power edge 1000e) and about 200 desktop computer systems of Dell computers of latest configuration (Optiplex 980/990, i5). These are working on Windows 7/8/8.1 and Linux platforms. In addition to this, the center has 4 SUN CAD workstations for research and project works.

## DTU Campus wide Network

The center is networked through high-end intelligent CISCO/Dax/Avaya/D-Link manageable switch , and possesses round the clock two leased lines of 50 Mbps (Bharti Airtel) and 1Gbps link of NKN (shared bandwidth) in different pipes for the LAN & Wi-Fi connectivity in the Library, Academic, Departments, Administrative and Hostel blocks of the campus, with internet facilities on all the nodes.

Access for internet is given to end user after secure authentication. Recently, the traffic is being monitored & controlled by full version of checkpoint (UTM).

Presently all the 200 computers are connected through LAN in its two floors providing internet access. It is providing programming facilities to all the departments of the college, predominantly COE, IT, ECE, EE, Physics and Mathematics departments.

The departments/academic/library/administrative blocks and all the hostels of DTU are interconnected through 48 core & 6 core optical fiber cable(OFC) and Wi-Fi with 75 number of access points.

The present network setup satisfies the needs of the University's rudimentary Internet connectivity and maximum resource sharing for the connected departments. To put DTU on par with IITs and reputed NITs, it is necessary to use Information Technology as the backbone for its academic, research, consultancy and administrative ventures.

## DTU Website

Computer Centre maintain DTU websites (www.dtu.ac.in, www.dce.edu), alumni portal, departments portal, library portal, faculty portal, hostel portal, student portal, DTU times portal, NPTEL portal and other related intranet web services. The DTU website is updated by this centre on daily basis. The information on the website displayed after the approval of the concerned department, faculty or administrative offices.

Computer Centre provides mail services to the university teaching communities and administrative officers. The traffic is being monitored & secure by full version of checkpoint (UTM).

## Training Programs

Besides, computer center is also used for conducting of short term training programs for staff and faculty. Further, it houses the Microsoft MSDN.

Academy with licensed Microsoft software's made available to all the faculty and students. DTU is also working as a nodal academy for information storage and management solutions through its DCE-EMC Academy that conducts training programs at the Computer center for all the engineering institutions in North India twice every year.

**Computer center also provides online examination facilities to the training and placement cell during recruitments.**

**The main objectives of computer Centre for forthcoming years are:**

- Extending the LANs of the departments by a canopy based wireless system so that all the buildings including academic, administrative, residential, hostel and creating hot zones throughout these areas.
- All new buildings are connected through LAN network. Further to network all faculty residences at an affordable cost and connected to the existing Wi-Fi network.
- To increase the bandwidth of the internet speed to meet the demands academic and research.
- Deploying IT based services for the workflow and academic activities and to ensure E-Governance.

## LIBRARY

A University stands for truth, reason and humanism. It helps in the progress of the society in general through ***advancement of knowledge*.** A university is rightly described as a community where scholars and teachers are the head, students are the body and library its heart.

Regarding library of a higher education institute the former President of India Late Dr S Radhakrishnan stated that:

> *"The library is the heart of all University's work, directly so, as regards its research work, and indirectly as regards its educational work which derives its life from research work. Scientific research needs a library as well as its laboratories, while for humanistic research the library is both library and laboratory in one. Training in higher branches of learning and research is mainly a question of learning how to use the tools, and if the library tools are not there how can the student learn to use them?"*

The Central Library of Delhi Technological University acquires a prominent place among the students and faculty. Situated in the heart of the DTU a three stories centrally air-conditioned building spread over an area of 5000 square meters, it is a central place for academic and research activities. The Library has a very rich collection of print as well as electronic books and journals satisfying the information needs of the faculty and students. The total collection of books is approx 2, 13, 351 consists of 1, 42, 315 main collection, 57, 887 Book Bank, 9,057 SCP Book Bank, and 4, 092 donated books.

Keeping in view the fast changes in technology, the knowledge base of the library is updated regularly by way of adding new literature in the form of text books, reference books, reports, proceedings, abstracts and indexes, encyclopedias, data books, standards (National and International), Journals and database on CD-ROM. Apart from adding the new literature, the basic literature is also procured for the new programs along with current one. Some new sections and services are also being started to make the library services of ISO 9001 standard.

## General Collection:

This section has a rich collection of appx 1, 42, 315 books having 99 thousand (appx.) unique titles, covering almost all areas of Engineering, Science and Technology and is open to all students and faculty members, from where they can grow borrow the required books as per rules.

## Book Banks:

The college runs a Book Bank having a collection of 57, 887 books intended to assists students, from the economically weaker sections of society, by giving text books on loan to deserving students for the whole academic semester according to the rules framed for the purpose. The college also runs a Book Bank having a collection 9057 specially meant for Scheduled Caste and Scheduled Tribe students who can borrow books from the book Bank for the whole academic semester according to the rules framed for this purpose.

## Reference Section:

A large number of Encyclopedias, Handbooks, Standards, Reports, Proceedings, Abstracts and Indexes, Data Books, Standards (National and International) are available in the library.

## Leisure reading Section:

The library also has a collection of good books on English and Hindi Literature for leisure reading and on the other important subjects like History, Sociology and Economics, etc.

## On-Line Databases:

Various online databases are being subscribed like Access Engineering (McGrwHill), ACM, American Chemical Society, American Institute of Physics, American Physical Society, ASCE, ASME, ASTM, Cambridge University Press, EBSCO, Economic & Political Weekly, EMERALD MANAGEMENT XTRA, ICE, IEEE/IEL, INDIANJOURNALS, Institute of Physics, IWA, Publishing Journals, Optical Society of America, Oxford University Press, SCIENCEDIRECT, SIAM, SPRINGERLINK, Taylor & Francis Journal and Wiley Blackwell Publishing. These databases provide online access to approximately 36, 468 e-journals (foreign and Indian) on various disciplines to facilitate the on going research activities and to expand the areas of future research activities.

## On-Line Books:

Library has Access to hundreds of e-books purchased by the library.

## QUALITY ENHANCEMENT:

- **CONTENT ENHANCEMENT:**

  The library subscribes to **Turnitin** software to check the similarity of projects, theses etc in order to stop the plagiarism.

❖ **LANGUAGE ENHANCEMENT:**

The library also subscribes to **Grammarly** to enhance the quality of language of projects and theses.

## Web OPAC:

The library catalogue can be access through www.dtu.ac.in. The library had developed an app to access the catalogue through Mobile namely **DTU Library**

## CD-ROM Access to Engineering and Scientific Data Base:

Various CD-ROM database i.e. BIS, ASTM etc. are being subscribed. Apart from these databases, library also has a good collection of books on CD-ROM and video recordings.

## Electronic Resource Centre:

The library being the member of consortia of Indian Digital Library of Engineering and Technology (INDEST) now E-Shodhsindhu and Developing Library Network (DELNET) offers various facilities of member institutions through resource sharing. A Continuous Internet search is done for identification of new resource which is subsequently made accessible through library home page.

## Institutional Repositories:

The library has developed one institutional repository using open source software. The repository can be accessed on intranet and internet .Following collections are accessible through the repository.

1. Paper of examination
2. M.E. Dissertation
3. PhD Thesis
4. Research Paper

5. News on the college
6. Prospectus
7. Annual Reports etc.

## Library Services:

The library services at Delhi Technological University are provided to students, staff and faculty members for updating their knowledge and supporting the research and teaching/ learning activities. These services are provided through the central library and departmental libraries.

## Reprography Section:

The facilities like Photocopy, Printing, Scanning, Spiral binding, Lamination etc. are provided to the students on payment basis within the premises of the library.

## Automation of Library and Services:

To keep pace with ongoing technological changes the library records have been computerized for making it accessible to the faculty and students at their work places which not only save the time but also make the simultaneous multiple access of information which otherwise is not possible in print formats. Well known Library Management software namely KOHA is being used for the automation of library services. Online Public Access Catalogue (OPAC) of books, Journals CDs and Videos available in the library is accessible to the users on intranet. Several useful resources on engineering and technology available on internet have been identified and links are made available on the library Web page http://www.library.dce.edu which includes: list of subscribed and free on-line journals/ resources/ references/ databases in Engineering, Science and Technology, list of research papers available through institutional archives.

## Electronic Surveillance system:

To provide the efficient management, the constant vigil is kept on the activities of staff and users through Electronic Surveillance system having a 24 hours recording facility

## Library Manual:

Library has prepared a manual for exposing the library activities to the new comers. This manual is provided at the time of enrollment as member of the library. This is also available on the digital library for reference.

## Information Literacy Programme:

Library organizes information literacy programmes under the title “explore the library” for users. These programmes consist of hands on knowledge to the participants on searching the engineering and technology literature, and the facilities available in the library.

# HOSTELS

DTU has 8 boys and 6 girls hostels in the campus to accommodate around 1275 boys and 445 girls. Hostel accommodation will be allotted to full-time students by the University Hostel Allotment Committee depending upon availability of seats in the hostels. Application for hostel allotment should be submitted in the prescribed form within stipulated time by the students. No ex-students shall be allotted any hostel accommodation.

| **Boys Hostels (8)** | | **Girls Hostels (6)** |
|---|---|---|
| 1. | Bhaskaracharya Hostel | 1. Sister Nivedita Hostel |
| 2. | Sir C.V. Raman Hostel | 2. Kalpana Chawla Hostel |
| 3. | Sir J.C. Bose Hostel | 3. Type – III Block 1, Girls Hostel |

| | | |
|---|---|---|
| 4. | Varahmihir Hostel | 4. Type – III Block 2, Girls Hostel |
| 5. | Sir Visversvaraya Hostel | 5. Type – II Block 1, Girls Hostel |
| 6. | Aryabhatta Hostel | 6. Type – II Block 2,3,4,5,7 Girls Hostel |
| 7. | Ramanujan Hostel | |
| 8. | HomiJehangirBhabha | |

**Detail of payment for Hostel accommodation**

| **Details** | **B.Tech & MBA (10 months)** | **M.Tech & Ph.D (12 months)** |
|---|---|---|
| Hostel Room Rent ( per year) | 10500/- | 12600/- |
| Electricity & Water Charges ( per year) | 2400/- | 3000/- |
| Security Services ( per year) | 2600/- | 3100/- |
| **Total (A) :-** | **15500/-** | **18700/-** |
| Hostel / Mess Establishment, Services & Maintenance Fee ( per year) | 2600/- | 3100/- |
| Medical Fees ( One time) | 600/- | 700/- |
| Hostel Security (Refundable) | | |
| Mess Advance ( Advance for 2 months) | 3000/- | 3000/- |
| Mess Security Deposit ( Refundable) | 3000/- | 3000/- |
| Hostel Security Deposit ( Refundable) | 3000/- | 3000/- |
| Furniture Security ( Refundable) | 3000/- | 3000/- |
| Hostel Information Bulletin | 100/- | 100/- |
| **Total (B) :-** | **15300/-** | **15900/-** |
| Mess advance for First Semester(C) | 10000/-* | 10000/-** |
| **Grand Total (A+B+C):-** | **30800/-** | **34600/-** |

**Note:**

1. ***B.Tech 1st , 2nd & 3rd year & MBA 1st & 2nd year students in addition to the above payment for hostel accommodation.
2. ****M.Tech 1st & 2nd year students in addition to the above payment for hostel accommodation.
3. Fee has to be paid only after confirmation of allotment.

The allotment of accommodation to the boys and girls in the hostel will be made on the following priority, subject to availability of seats in the hostels.

i. Hostel accommodation is limited and will be allotted to full-time bonafide students of DTU. However the applicants should satisfy the eligibility criteria for hostel allotment. After the allotment of the rooms the allottee will be held responsible for any damage in his/her room.

ii. Hostel allotment will be provided on the basis of the category selected by the candidate during admission at Delhi Technological University. No further changes of category will be allowed.

iii. The first preference for hostel accommodation for the 1st semester of B.Tech. students will be given to the outside Delhi Category and so it may be possible that Delhi Category candidates may not get hostel accommodation.

iv. Allotment to Delhi Category students will be made as per university rules/ guidelines.

v. Hostel accommodation is not mandatory.

vi. During summer vacation, if a student has to stay in a hostel, he/she shall have to pay guest charges @ Rs.1500/- per month.

vii. On special occasions, if a student wants to stay in a hostel with some other students not exceeding 5 days, he/she shall pay guest charges Rs.100/- per day.

**Note:-**

1. Hostel rent is payable in advance, before the possession of the room.
2. Mode of payment for Hostel Fee:-

Hostel Allotment fee for the year 2017-18 will be deposited through online payment facility only. Click on Hostel Fee/Mess Payment from Important Link on Hostel Website www.hostels.dtu.ac.in

3. Two months mess advance will be adjusted when the student leaves the hostel finally.
4. All the hostel residents are required to vacate their rooms within a week of the last examination each year. The rooms will be re-allocated at the beginning of the academic session.
5. At any time during the program, a student may be required to pay additional deposits or fees to cover increased cost.
6. For all enquiries regarding hostel accommodation, students should contact the hostel office in Transit Hostel (Timing: 10:00 a.m. to 5:00 p.m.) during working days.
7. For details of information regarding hostel facilities, please refer hostel information Bulletin 2017-18 and hostel website: hostel.dtu.ac.in.
8. The students taking admission in DTU may apply for fresh hostel allotment online vide hostel website-hostels.dtu.ac.in. Also, the senior students already living in hostels/fresh applicants may also apply for hostel online.
9. All the information regarding hostel fees, rules, regulations and criteria for hostel allotment is also available on the website at www.hostel.dtu.ac.in.

## CANTEEN & SHOPPING PLAZA

DTU has two storey canteen building. Separate space is provided for boys & girls students and first floor is exclusively reserved for the faculty. Most modern kitchen with appropriate facilities keeping hygiene in mind have been provided in the canteen. A shopping plaza is also available in the campus where day to day need of students viz stationery, photocopy, PCO, Fax, souvenir, book and general items are available.

# HEALTH CENTRE

DTU has extended benefits of medical facilities of Directorate General of Health Services, Govt. of Delhi, to all of its employees including faculty and other staff. Under this facility employees avail OPD facilities at Delhi Heath Services dispensaries situated all over Delhi and avail indoor facilities in all Govt. and empaneled private Hospitals and pathological laboratories. Further, for benefits of day-boarding and hostellers, employees and residents of the Campus, University has established an in-house Health Center where two qualified general physician (one for 4 hours during 01 pm to 5 pm and one for 3 hours during 9 am to 12 pm), one dentist and one ophthalmologist are providing services for 2 hours all the six days a week. Additionally an Orthopaedician (1-3 pm: Mon.wed and Fri), a Gynaecologist (1-4 pm: Tue and Thu) and a Psychiatrist (1-4 pm: Tue and Thu) also provide their services at university health centre. One sport medicine-cum-physiotherapy center has also been established in Health Center for 2 hours in all the six days.

| Sr. No. | Name | Expert |
|---|---|---|
| 1. | Dr. Ravi Bansal | General Physician |
| 2. | Dr. Rajesh Singhai | General Physician |
| 3. | Dr. Arpana Bansal | Eye Specialist |
| 4. | Dr. Bharat Bhushan Sethi | Dentist |
| 5. | Dr. Subodh Mor | Sports Medicine-cum-Physiotherapist (MPT) |
| 6. | Dr. Dinesh Bansal | Orthopaedician |
| 7. | Dr.Nishi Jha | Gynaecologist |
| 8. | Dr. Gaurav Gupta | Psychiatrist |

# SECTION-F

## ANNEXURES

- Fee Structure
- Academic Calendar 2017-18
- Fee concession for economically weaker sections
- Merit Scholarship for toppers
- Ordinance Relating to Maintenance of discipline
- DTU Administration and Faculty

# FEE STURCTURE

## (A). Bachelor of Technology

| S. No. | Particulars | 1st Year Fee (Rs.) | 2nd Year Fee (Rs.) | 3rd Year Fee (Rs.) | 4th Year Fee (Rs.) |
|---|---|---|---|---|---|
| **A. Components charged annually** | | | | | |
| 1. | Tuition Fee | 82,000 | 90,500 | 99,500 | 1,14,500 |
| 2. | Non Govt. Component | | | | |
| 2.1 | Student Welfare fee<br>(Co-curricular Activities, Training & Placement, Extra Curricular Activities, Annual Gathering, Students welfare, Institutional Development, Outsourcing, conference, seminar, workshop, innovative projects, skill development activities and Misc. Expenditure on unspecified items) | 16,500 | 18,000 | 20,000 | 20,000 |
| 2.2 | Facilities & Services Charges<br>(Research initiatives, training programmes, Awards, automation, facilities, entrepreneurship activities and any misc. expenditure on unspecified items) | 22,000 | 25,000 | 28,000 | 35,000 |
| 2.3 | Economically weaker section fund | 5,000 | 5,000 | 5,000 | 5,000 |
| 2.4 | Examination fee<br>(Examination Infrastructure strengthening, expenditure on examination activities, confidential printing etc.) | 11,000 | 12,000 | 13,000 | 15,000 |
| 2.5 | Premium amount for medi-claim of student (per annum) | 500 | 500 | 500 | 500 |
| **Total (A)** | | **1,37,000** | **1,51,000** | **1,66,000** | **1,90,000** |

| | | | | | |
|---|---|---|---|---|---|
| **B. Components charged once at the time of admission** | | | | | |
| 1. | Alumni Association life membership, registration fee (one time, non refundable) | 1,000 | ---- | ---- | ---- |
| **Total (B)** | | **1,000** | | | |
| **Grand Total (A+B)** | | **1,38,000** | **1,51,000** | **1,66,000** | **1,90,000** |

## (B). Bachelor of Technology (Evening)

| S. No. | Particulars | 1st Year Fee (Rs.) | 2nd Year Fee (Rs.) | 3rd Year Fee (Rs.) | 4th Year Fee (Rs.) |
|---|---|---|---|---|---|
| **A. Components charged annually** | | | | | |
| 1. | Tuition Fee | 71,500 | 78,500 | 86,500 | 90,000 |
| 2. | Non Govt. Component | | | | |
| 2.1 | Student Welfare fee<br>(Co-curricular Activities, Extra curricular Activities, Annual Gathering, Students welfare, Institutional Development, Outsourcing, conference, seminar, workshop, innovative projects, skill development activities and Misc. Expenditure on unspecified items) | 13,000 | 14,500 | 16,000 | 16,000 |
| 2.2 | Facilities & Services Charges<br>(Research initiatives, training programmes, Awards, automation, facilities, entrepreneurship activities and any misc. expenditure on unspecified items) | 11,500 | 14,000 | 16,000 | 21,000 |
| 2.3 | Examination fee<br>(Examination Infrastructure strengthening, expenditure on examination activities, confidential printing etc.) | 9,000 | 10,000 | 11,000 | 12,000 |

| S. No. | Particulars | 1st Year Fee (Rs.) | 2nd Year Fee (Rs.) | 3rd Year Fee (Rs.) | 4th Year Fee (Rs.) |
|---|---|---|---|---|---|
| 2.4 | Premium amount for medi-claim of student (per annum) | 500 | 500 | 500 | 500 |
| **Total (A)** | | **1,05,500** | **1,17,500** | **1,30,000** | **1,39,500** |
| B. Components charged once at the time of admission | | | | | |
| 1. | Alumni Association life membership, registration fee (one time, non-refundable) | 1,000 | ----- | ----- | ----- |
| **Total (B)** | | 1,000 | | | |
| **Grand Total (A+B)** | | **1,06,500** | **1,17,500** | **1,30,000** | **1,39,500** |

# ACADEMIC CALENDAR (2017-18)

# ODD SEMESTER

20.07. 2017 to 27.07. 2017 : Filling of online registration forms by all students for

**UG :** III, V and VII Semester regular courses and /or back papers / improvements/re-registration as applicable including all Ex-Students.

**PG:** III Semester regular /back papers as applicable including all Ex- students

**PhD:** Continuing PhD students/scholars

01.08.2017 (Tue) : On campus registration in person by all UG and PG students (except I semester students), continuing PhD students/ scholars & all Ex-Students (*forback papers, improvements, re-registration*). Teaching starts for UG: III, V and VII Semester courses; PG: III Semester courses.

02.08.2017(Wed) : Vice Chancellor's Address to newly admitted Students (Forenoon); Registration of first year students (Afternoon) and teaching starts from 03.08.2017.

16.08.2017(Wed) : Last date of registration of the courses, addition/deletion of courses for all regular and Ex- students (*except those students whose admission is confirmed later to this date*).

**Supplementary Examination: 14th August 2017 (Monday) onwards**

22.09.2017(Fri) : Mid Term notification of shortage of attendance.

**MID Semester Examination: 25th Sept-30th Sept 2017 (Monday-Saturday)**

**Notification of Make up for MID Semester Examination:**
**16th Oct-20th Oct 2017 (Monday-Friday)**

10.11.2017 (Fri) : Teaching ends for all classes; Display of marks and shortage of attendance

**END Semester Theory & Practical Examination: 13.11.2017 (Monday) onwards**

05.12.2017 (Tue) : Grade moderation and display of grades for I, III and V semester (UG) courses.

06.12.2017 to 01.01.2018 : ***Winter Vacation, Workshop Training, Survey Camp, Industrial Training***

22.12.2017 (Fri) : Declaration of End semester results

## EVEN SEMESTER

23.12.2017 to 01.01.2018 : Filling of online registration forms by all UG, PG and Ph.D. students including Ex-Students (*forback papers, improvements re-registration*).

02.01.2018(Tue) : On campus registration in person by all students including Ex-Students (*forback papers, improvements, re-registration*) by submitting copy of online registration form & Teaching starts for all classes.

16.01.2018(Tue) : Last date of registration for all students, including Ex-students.

**Supplementary /Makeup Examination: 15th Jan 2018 (Monday) onwards**

02.03.2018 (Fri) : Mid Term notification of shortage of attendance

**MID Semester Examination: 05th March -10th March, 2018 (Monday-Saturday)**

**Notification of Make up for MID Semester Examination**

**26th March-30th March, 2018 (Monday-Friday)**

27.04.2018(Fri) : Teaching ends for all classes; Display of sessional marks and shortage of attendance.

**END Semester Theory & Practical Examination: 30.04.2018 (Monday) onwards**

31.05.2018 (Thu) : Grade moderation & display of grades for II.IV and IV semester (UG) courses.

| | |
|---|---|
| 01.06.2018 (Fri) | : Summer Vacation, Workshop Training, Industrial Training |
| 15.06.2018 (Fri) | : Declaration of End semester results *except Major Project*-II for PG program. |
| 31.07.2018 (Tue) | : University reopens after summer vacation |

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**1. Technical Fest : 13th -15th Feb, 2018 (Tuesday to Thursday)**

**2. Engifest : 15th -17th Feb, 2018 (Thursday–Saturday)**

**3. Sports Meet : 23rd -25th March 2018 (Friday to Sunday)**

## FEE CONCESSION FOR STUDENTS BELONGING TO ECONOMICALLY WEAKER SECTIONS

All the desirous and eligible students of DTU should apply for fee concession through respective Head of the Departments to Academic-UG Section. The criteria and guidelines for the fee concession and concession in hostel fee are as under:

1. The students whose family income from all sources is less than Rs. 4,50, 000/- per annum will only be eligible for fee concession. Submit the Income Certificate Form-16 duly issued by the parent's Employer or an Affidavit duly issued by Distt. Revenue Authority, it self-employed.
2. The students of 1st year and 3rd year shall deposit the University annual fee at the start of the academic session and fee concession amount will be reimbursed if he/she fulfills the criteria of fee concession. In 2nd and 4th year the student will deposit the fee as per the applicable fee concession received in 1st and 3rd year respectively.
3. First year student has to submit the copies of the all mark sheets starting from 12th class and JEE Rank Card.
4. Any student who availed fee concession in 1st year will continue to be eligible for Fee Concession in 2nd year also, similarly student availing fee concession in 3rd

year will continueto be eligible for the same in 4thyear also provided he/she has acquired minimum required credits for promotion from from1st year to 2nd year /3rd year to 4th year respectively.

5. The student has to submit an undertaking duly counter signed by his/her parents on stamp paper of Rs. 10/- duly attested by public Notary that “he/she has not obtained or applied for any grant/ financial help for the same purpose from any other Ministry/ Govt. Department of India/ State, any Public/ Private Organization.” The application of the candidate concealing the facts will automatically stand cancelled.
6. The student should not be involved in any indisciplianary activity (ies) in the University.
7. Copy (ies) of Death Certificate of earning parent(s).
8. Copy of award letter of Scholarship/fellowship if any, being awarded any Govt. or non-govt. organization.
9. Copy of Bank Passbook mentioning IFSC and Bank A/C No.
10. The full fee concession may be given to the student’s maximum upto five (05) % of the sanctioned intake for the particular year in the respective program or equivalent to the number of double, the half fee concession may be granted to the deserving students.
11. The full fee concession will be granted to the wards (up to two children only) of all the Group C’ employees and half fee concession may be granted to the wards (up to two children only) of all the “Group B’ employees of the DTU/ DCE over and above the student’s maximum upto five (05) % of the sanctioned intake for the particular year.

The students are to submit their application by duly forwarded by respective HoD along with the above mentioned documents. All shortlisted students will be required to appear for personal interview by a designated Committee for which dates will be announced later on. Applications will be accepted which can be only in prescribed format download from www.academic.dce.edu.

**Sub: Institution of Merit Scholarship to the toppers of each branch of Bachelor of Technology.**

The merit Scholarship is awarded strictly on principle of academic merit of the candidate who satisfy the following conditions:

1. The student who has passed all the subject of the semester in one attempt.
2. The student concerned has not secured less than 75% / 8.75 CGPA (whichever applicable) in the academic semester.
3. The candidates should have a sound moral character and should not have indulged into any act of misconduct during their studies at the University

The merit scholarship shall be awarded to top two rankers of the each program in each semester. The Value of scholarship shall be as follows:

i The first top ranker shall be provided merit scholarship of Rs. 10,000/- and a certificate of merit.

ii The second top ranker shall be provided merit scholarship of Rs. 5,000/- and a certificate of merit.

Award of Rs.10,000/- will be given annually only for toppers, of full time UG course. Rest of the awards will be discontinued.

Amended by minutes vide no. F.No. DTU/Registrar/Minutes/2015/3295-3300 dated: 05.06.2015.

# NOTIFICATION

## (Maintenance of Discipline)

**No. F.** DTU/ORG/Notification/04(1)/2009…… In exercise of the powers conferred by sub-section (2) of Section 32 of the Delhi Technological University Act, 2009 (Delhi Act 6 of 2009), the Board of Management, Delhi Technological University, hereby makes Ordinanace-6 Maintenance of Discipline among students.

**1. Short title and Commencement:**

(a) These Ordinance may be called the Delhi Technological University (Sixth) Ordinance, 2012.

(b) They shall come into force with effect from the date of meeting of the Board of Management i.e. 28.12.2010

**2. Definitions:**

(i). In these ordinances, unless the context otherwise requires:-

(a). "Act", "statutes", "ordinance" and "regulations" mean respectively the Delhi Technological University Act, 2009 (6 of 2009), the statues, the ordinance and the regulations of the Delhi Technological University.

(b). "Department", and "School" means the academic departments and schools of Delhi Technological University.

(ii). Words and expression used, but not defined, in these ordinances shall have the meanings assigned to them in the Act and the statues.

**3. Power to vest in the Vice Chancellor**

(i). All powers relating to maintenance and enforcement of discipline among and disciplinary action against the students of the University shall vest in the Vice Chancellor.

(ii). The Vice Chancellor may delegate all or any such of his powers, as he deems proper, to such other officers and authorities of the university as he may specify in this behalf.

**4. Acts of indiscipline and misconduct**

1. Without prejudice to the generality of the power to maintain and enforce discipline under this ordinance, the following shall amount to acts of indiscipline or misconduct on the part of a student of the University:-

   (a) Physical assault, or threat to use physical force, against any member of the teaching or non-teaching staff of any Department or school of the University or against any student or the University.

   (b) Remaining or co-curricular activity which he/ she is expected to participate in;

   (c) Carrying of, use of or threat to use, any weapon:

   (d) Misbehavior, using abusive language or cruelty towards any other student, teacher or any other employee of the University.

   (e) Use of drugs or other intoxicants except those prescribed by a qualified doctor;

   (f) Any violation of the provisions of the Civil Rights Protection Act, 1976;

   (g) Indulging in or encouraging violence or any conduct which involves moral turpitude;

   (h) Any form of gambling;

   (i) Violation of the status, dignity and honour of a student belonging to a scheduled caste or a schedule tribe.

   (j) Discrimination against any student or a member of staff on grounds of caste, creed, language, place of origin, social and cultural background or any of them.

   (k) Practicing casteism and untouchability in any form or inciting any other person to do so;

   (l) Any act or gesture, whether verbal physical or otherwise verbal physical or otherwise, derogatory to women;

(m) Consuming tobacco, liquor or smoking;

(n) Any attempt at bribing or corruption of any manner or description;

(o) Willful destruction of the property of the University.

(p) Behaving in a rowdy, intemperate or discovery manner in the premises of the University or encouraging or inciting any other person to do so;

(q) Causing disruption of any manner or description of the academic functioning of the University system;

(r) Indulging in or encouraging any form of disruptive activity connected with tests, examinations or any other activity of the University.

(s) Indulging in or encouraging any form of disruptive activity connected with tests, examinations or any other activity of the University;

(t) (Truancy and unpunctuality;

2. The Vice Chancellor may amend or add to the list of malpractices under clauses (1)

**5. Penalties for breach of discipline**

Without prejudice to the generality of his powers relating to the maintenance of discipline and taking such action in the interest of maintaining discipline as deemed appropriate by him.

(1) The Vice Chancellor may in exercise of his powers aforesaid, order or direct that any student or students-

(a) Be expelled from the University in which case he/ she shall not be re-admitted to the University, from where his expelled; or

(b) Be, for a stated period, rusticated in which case he/ she not be admitted to the University till the expiry of the period of rustication; or

(c) Be, for a stated period expelled from the University Hostel/ hall of residence or;

(d) Be not, for a stated period, admitted to a course or courses of study of the University; or

(e) Be imposed with the fine of a specified amount of money;

(f) Be debarred from taking a University examination or examinations for one or more years.

(2) The Vice Chancellor, in exercise of his powers aforesaid or on the recommendations of Board of Discipline, may also order or direct that the result of the student concerned of the examination or examinations at which he/ she has appeared, be canceller.

(3) The Chairman, Board of Discipline, Head of Teaching Departments and schools, Wardens of different hostels, Librarian and In-charge of any centralized facilities in the university shall have the authority to exercise disciplinary powers over students in their respective domain, in the university as may be necessary for the proper functioning of the department, hostel, library, central facility, which may include issuing warning, suspension from the classes/ hostels and/ or debarring from using the central facilities for a maximum period of one month. However, in all such cases, the final decision shall be taken by the Board of Discipline.

**6. Ragging**

Ragging for the purpose of this ordinance, shall ordinarily mean any act, conduct or practice by which the dominant power or status of senior students if brought to bear upon the students who are in any way considered junior or inferior by the former and includes individual or collective acts or practices which:

(a) Involve physical assault or threat to use physical force;

(b) Violate the status, dignity and honour of students, in particular woman/ girl students and those belonging to a schedules caste or a schedules tribe;

(c) Expose students to ridicule or contempt or commit an act which may lower their self esteem; and

(d) Entail verbal abuse, mental or physical torture, aggression, corporal punishment, harassment, trauma, indecent gesture and obscene behavior.

## A. What constitutes Ragging?

Ragging constitutes one or more of the following acts:

(a) Any conduct by any students whether by words spoken or written or by an act which has the effect of teasing, treating or handling with rugnesses a fresher or any other students;

(b) Indulging in rowdy or indisciplined activities by any student or students which causes or is likely to cause annoyance, hardship, physical or psychological harm or to raise fear or apprehension thereof in any fresher or any other student;

(c) Asking any student to do any act which such student will it in the ordinary course do and which has the effect of causing or generating a sense of shame, or torment or embarrassment so as to adversely affect the physique or psyche of such fresher or any other student;

(d) Any act by a senior student that prevents, disrupts or disturbs the regular academic activity of any other student or a fresher;

(e) Exploiting the services of a fresher or nay other student for completing he academic tasks assigned to an individual or a group of students;

(f) Any act of financial extortion or forceful expenditure burden put on a fresher of any other student by students;

(g) Any act of physical abuse including all variants of it: sexual abuse, homosexual assaults, stripping, forcing obscene and lewd acts, gestures causing bodily harm or any other danger to health or person;

(h) Any act or abuse by spoken words, emails, post, public insults which would also include deriving perverted pleasure, vicarious or sadistic thrill from actively or passively participating in the discomfiture to fresher or any other student;

(i) Any act that affects the mental health or self-confidential of a fresher or any other student with or without an intent to derive a sadistic pleasure or showing off power, authority or superiority by a student over any fresher or any other student.

**B. Prohibition of Ragging**

(a) Ragging in any form is strictly prohibited in University campus and any part of University system, as well as on public transport or at any place, public or private.

(b) Any individual or collective act or practices of ragging constitutes gross indiscipline and shall be dealt with relevant provisions.

(c) The Head of the Department/ school, Proctor, wardens of Hostels, Librarian, In-charge of any central facility, security officer or any faculty member of the university shall take immediate action on receipt of any information of the occurrence of ragging.

(d) Notwithstanding anything in clause (iii) above, the Chairman, Board of Discipline may also suo-moto enquire into, any incident of ragging and make a report to the Vice Chancellor of the identity of those who have engaged in ragging and the nature of the incident.

(e) The Chairman, Board of Discipline may also submit an initial report to VC establishing the identity of the perpetrators, of ragging and the nature of the ragging incident.

(f) If the Head of the Department/ Schools, Proctor, Chief Warden, Librarian, In-charge-Central Facility and Chairman, Board of Discipline is satisfied that for some reason, to be recorded in writing, it is not feasible to hold such an enquiry, he/ she may so advice the Vice Chancellor accordingly.

(g) When the Vice Chancellor is satisfied that it is not expedient to hold such an enquiry into an incident of ragging, his/ her decision shall be final.

(h) One the receipt of a report under clause (iv) of (v) or determination by the relevant authority under clause (vi) disclosing the occurrence of ragging incidents described in clause 5 (A), the Vice Chancellor shall take appropriate penal action which may include rustication of a student or student for a specific number of year from University, debarring from appearing in University examination and/ or take any other measure as prescribed by Hon'ble Supreme Court or any Court of Law.

(i) The Vice Chancellor may in other cases of ragging order or direct that nay student or students be expelled or be not for a stated period admitted to a course of study or in a University Examination, for one or more years or that the result of student/ students concerned in the examination in which they appeared be cancelled.

(j) In case any students who have obtained degrees of Delhi Technological University are found guilty under this Ordinance, appropriate action for withdrawal of degrees conferred by the University shall be initiated.

(k) For the purpose of this Ordinance, abetment to ragging whether by way of any act, practice or incitement of ragging will also amount to ragging.

(l) All students shall be required to submit written undertaking(s) to the University in the beginning of academic session that they shall indulge into any act of ragging.

**7. Declaration to be signed by a student**

At the time of admission, every student shall be required to sign a declaration

On oath that he/ she shall submit himself/ herself to the disciplinary jurisdiction of the Vice Chancellor and other authorities of the University.

**8. Constitution of the Board of Discipline**

(1) The Boards of Discipline at the level of the University shall be constituted by the Vice Chancellor as follows:-

(a) A Professor of the University to be nominated by the Vice Chancellor – **Chairman**

(b) Chief Warden of the University Hostels

(c) Two senior teachers of the University to be nominated by the Vice Chancellor, members.

(d) One senior lady teacher of the University to be nominated by the Vice-Chancellor, member.

(e) Head of the concerned department/ school and hostel warden to which the act of indiscipline of misconduct by a student or students pertains to the Chairman in case feels that input from the student(s) are required for better examination of a case may do so by calling the student(s).

(f) Assistant Registrar (Academic) shall be the Member Secretary of the Board of Discipline.

(2) The members of the board including Chairman shall hold office for a period of two years and a vacancy occurring in the Board of Discipline shall be filled for the remaining period of the term of the member whose department has caused the vacancy.

(3) Three members of the Board of discipline including the Chairman, shall form the quorum.

(4) In the absence of the Chairman, the senior most member of the Board of Discipline shall act as the Chairman.

**9. Functions of the Board of Discipline**

(1) The Board of Discipline shall perform the following functions;-

(a) To consider matters concerning maintenance of discipline among the students in the University.

(b) To enquiry into the acts of indiscipline or misconduct committed by a student or students whenever such cases are referred to the Board of Discipline and to submit their findings conclusions and recommendations for the quantum of punishment under the provision of this ordinance to the Vice Chancellor or the person authorized by the Vice Chancellor in this behalf.

(c) To supervise and monitor the disciplinary climate prevailing in the University.

(d) To take preventative and precautionary steps such as issue of notices, warning, instructions etc. as the case may be, for the purpose of forestalling acts of individual or collective indiscipline, misconduct and ragging etc.

(e) To maintain liaison with the police authorities and the concerned departments of the Government, neighboring institutions and the concerned authorities of the University regarding maintenance of law Chancellor from time to time.

(2) The decision in each case shall be conveyed by the Chairman communicating the penalty or penalties, if any, imposed on a student or students.

(3) A student or students, who are aggrieved with the penalty imposed upon them, may appeal to the vice chancellor whose decision in this regard shall be final and binding upon the parties.

## DELHI TECHNOLOGICAL UNIVERSITY ADMINISTRATION

| S. No. | NAME | DESIGNATION |
|---|---|---|
| 1. | PROF. YOGESH SINGH | VICE CHANCELLOR |
| 2. | PROF. S.K GARG | PRO-VICE CHANCELLOR |
| 3. | PROF. ANU SINGH LATHER | PRO-VICE CHANCELLOR |
| 4. | PROF. SAMSHER | REGISTRAR |
| 5. | SH. KAMAL PATHAK | CONTROLLER OF EXAMINATIONS |
| 6. | DR. R.K SHUKLA | LIBRARIAN |

## DEANS

| S. No. | Name | Designation |
|---|---|---|
| 1. | Prof. H C Taneja | Dean Academics (PG) |
| 2. | Prof. Madhusudan Singh | Dean Academics (UG) |
| 3. | Prof. Samsher | Dean Student Welfare |
| 4. | Prof. Ashutosh Trivedi | Dean Industrial Research Development |
| 5. | Prof. S K Singh | Dean Alumni Affairs |
| 6. | Prof. Vishal Verma | Dean International Affairs |
| 7. | Prof. Pragati Kumar | Dean Continuing Education |

## HEAD OF THE DEPARTMENTS

| S. No. | Name | Department |
|---|---|---|
| 1. | Prof. Archana Rani | Applied Chemistry |
| 2. | Prof. Suresh C. Sharma | Applied Physics |
| 3. | Prof. Sangita Kansal | Applied Mathematics |
| 4. | Prof. D Kumar | Bio Technology |
| 5. | Dr. Rajni Jindal | Computer Science & Engineering |
| 6. | Prof. Nirendra Dev | Civil Engineering |
| 7. | Prof. Madhusudan Singh | Electrical Engineering |
| 8. | Prof. S Indu | Electronics and Communication Engg |
| 9. | Prof. A. K. Gupta | Environmental Engineering |
| 10. | Dr. Seema Singh | Humanities |
| 11. | Dr. Kapil Sharma | Information Technology |
| 12. | Prof. R. S. Mishra | Mechanical Engineering |
| 13. | Dr. R. S. Walia | Training & Placement |
| 14. | Dr. Rajan Yadav | Delhi School Of management |

## LIST OF FACULTY

| S. No. | DEPARTMENT/PROGRAM | FACULTY NAME | DESIGNATION |
|---|---|---|---|
| 1 | APPLIED CHEMISTRY | DR. DEVENDRA KUMAR | PROFESSOR |
| 2 | APPLIED CHEMISTRY | DR. ARCHNA RANI | PROFESSOR |
| 3 | APPLIED CHEMISTRY | MR. SUDHIR GOPALRAO WARKER | ASSOCIATE PROFESSOR |
| 4 | POLYMER TECH. | DR. RAMINDER KAUR | ASSISTANT PROFESSOR |
| 5 | POLYMER TECH. | DR. ROLI PURWAR | ASSISTANT PROFESSOR |
| 6 | POLYMER TECH. | SH. MANISH JAIN | ASSISTANT PROFESSOR |
| 7 | POLYMER TECH. | MS. POONAM | ASSISTANT PROFESSOR |

| S. No. | DEPARTMENT/PROGRAM | FACULTY NAME | DESIGNATION |
|---|---|---|---|
| 8 | APPLIED CHEMISTRY | DR.SAURABH MEHTA | ASSISTANT PROFESSOR |
| 9 | APPLIED CHEMISTRY | DR. RAM SINGH | ASSISTANT PROFESSOR |
| 10 | APPLIED CHEMISTRY | DR. ANIL KUMAR | ASSISTANT PROFESSOR |
| 11 | APPLIED CHEMISTRY | DR. RICHA SRIVASTAVA | ASSISTANT PROFESSOR |
| 12 | APPLIED CHEMISTRY | DR. DEENAN SANTHIYA | ASSISTANT PROFESSOR |
| 13 | APPLIED PHYSICS | DR. RAVINDRA KUMAR SINHA (ON LIEN) | PROFESSOR |
| 14 | APPLIED PHYSICS | DR. SURESH CHAND SHARMA | PROFESSOR |
| 15 | APPLIED PHYSICS | DR. ARUN KUMAR JHA (ON LIEN) | ASSOCIATE PROFESSOR |
| 16 | APPLIED PHYSICS | DR.RINKU SHARMA | ASSOCIATE PROFESSOR |
| 17 | ENGG PHY | DR.ALLAM SRINIVASA RAO | ASSOCIATE PROFESSOR |
| 18 | APPLIED PHYSICS | MR. VINOD SINGH | ASSISTANT PROFESSOR |
| 19 | APPLIED PHYSICS | DR. AJEET KUMAR | ASSISTANT PROFESSOR |
| 20 | APPLIED PHYSICS | DR. NITIN KUMA PURI | ASSISTANT PROFESSOR |
| 21 | APPLIED PHYSICS | DR. AMRISH KUMAR PANWAR | ASSISTANT PROFESSOR |
| 22 | APPLIED PHYSICS | DR. M.JAYASIMHADARI | ASSISTANT PROFESSOR |
| 23 | APPLIED PHYSICS | MS. RENUKA BAKOLIA | ASSISTANT PROFESSOR |
| 24 | APPLIED PHYSICS | MS.RICHA SHARMA | ASSISTANT PROFESSOR |
| 25 | APPLIED PHYSICS | SH.YOGENDER KUM. MEENA | ASSISTANT PROFESSOR |
| 26 | ENGG PHY | DR. YOGITA KALRA | ASSISTANT PROFESSOR |
| 27 | ENGG PHY | DR. RISHU CHAUJJAR | ASSISTANT PROFESSOR |
| 28 | ENGG PHY | DR. MOHAN SINGH MEHATA | ASSISTANT PROFESSOR |
| 29 | ENGG PHY | DR. PAWAN KUMAR TYAGI | ASSISTANT PROFESSOR |

| S. No. | DEPARTMENT/PROGRAM | FACULTY NAME | DESIGNATION |
|---|---|---|---|
| 30 | ENGG PHY | MS. BHARTI SINGH | ASSISTANT PROFESSOR |
| 31 | ENGG PHY | MS.SARITA BAGHEL | ASSISTANT PROFESSOR |
| 32 | ENGG PHY | SH. DESHRAJ MEENA | ASSISTANT PROFESSOR |
| 33 | ENGG PHY | SH. MUKHTIYAR SINGH | ASSISTANT PROFESSOR |
| 34 | APPLIED MATHEMATICS | DR. H.C.TANEJA | PROFESSOR |
| 35 | APPLIED MATHEMATICS | DR. SANGITA KANSAL | PROFESSOR |
| 36 | APPLIED MATHEMATICS | DR. L.N.DAS | PROFESSOR |
| 37 | APPLIED MATHEMATICS | DR. V.P KAUSHIK | PROFESSOR |
| 38 | APPLIED MATHEMATICS | DR.ANJANA GUPTA | ASSOCIATE PROFESSOR |
| 39 | APPLIED MATHEMATICS | DR. RAMESH SRIVASTAVA | ASSOCIATE PROFESSOR |
| 40 | APPLIED MATHEMATICS | DR.NAOKANT DEO | ASSOCIATE PROFESSOR |
| 41 | APPLIED MATHEMATICS | DR. S.SIVAPRASAD KUMAR | ASSOCIATE PROFESSOR |
| 42 | APPLIED MATHEMATICS | DR. SOMA GUPTA | ASSISTANT PROFESSOR |
| 43 | APPLIED MATHEMATICS | DR. VIVEK KUMAR AGARWAL | ASSISTANT PROFESSOR |
| 44 | APPLIED MATHEMATICS | DR. NILAM | ASSISTANT PROFESSOR |
| 45 | APPLIED MATHEMATICS | DR. CHANDRA PRAKASH | ASSISTANT PROFESSOR |
| 46 | APPLIED MATHEMATICS | SH. ROHIT KUMAR | ASSISTANT PROFESSOR |
| 47 | MATHEMATICS & COMPUTING | MS. GOONJAN JAIN | ASSISTANT PROFESSOR |
| 48 | MATHEMATICS & COMPUTING | DR. DINESH UDAR | ASSISTANT PROFESSOR |
| 49 | BIOTECHNOLOGY | DR. PRAVIR KUMAR | ASSOCIATE PROFESSOR |
| 50 | BIOTECHNOLOGY | DR. JAI GOPAL SHARMA | ASSOCIATE PROFESSOR |
| 51 | BIOTECHNOLOGY | DR. ASMITA DAS | ASSISTANT PROFESSOR |
| 52 | BIOTECHNOLOGY | DR. NAVNEETA BHARDWAJ | ASSISTANT PROFESSOR |

| S. No. | DEPARTMENT/PROGRAM | FACULTY NAME | DESIGNATION |
|---|---|---|---|
| 53 | BIOTECHNOLOGY | DR. YASHA HASIJA | ASSISTANT PROFESSOR |
| 54 | CIVIL ENGG. | DR. V.K.MINOCHA (ON DIVERTED AT CBPGEC) | PROFESSOR |
| 55 | CIVIL ENGG. | DR.S.K.SINGH | PROFESSOR |
| 56 | CIVIL ENGG. | DR.ASHUTOSH TRIVEDI | PROFESSOR |
| 57 | CIVIL ENGG. | DR. ASHOK KUMAR GUPTA(PT) | PROFESSOR |
| 58 | CIVIL ENGG. | DR. ASHOK KUMAR GUPTA | PROFESSOR |
| 59 | CIVIL ENGG. | DR. NIRENDER DEV | PROFESSOR |
| 60 | CIVIL ENGG. | DR. K.C.TIWARI | PROFESSOR |
| 61 | CIVIL ENGG. | DR.ANIL KUMAR SAHU | PROFESSOR |
| 62 | CIVIL ENGG. | DR. RAKESH KUMAR | PROFESSOR |
| 63 | CIVIL ENGG. | SH.RAKESH MEHROTRA | ASSOCIATE PROFESSOR |
| 64 | CIVIL ENGG. | MR.ALOK VERMA | ASSOCIATE PROFESSOR |
| 65 | CIVIL ENGG. | MR. G.P.AWADHIYA | ASSOCIATE PROFESSOR |
| 66 | CIVIL ENGG. | DR. AWADHESH KUMAR | ASSOCIATE PROFESSOR |
| 67 | CIVIL ENGG. | DR. NARESH KUMAR | ASSOCIATE PROFESSOR |
| 68 | CIVIL ENGG. | DR.AMIT KUMAR SRIVASTAVA | ASSOCIATE PROFESSOR |
| 69 | CIVIL ENGG. | MR.S.ANBU KUMAR | ASSOCIATE PROFESSOR |
| 70 | CIVIL ENGG. | MR.NARAD MUNI PRASAD | ASSOCIATE PROFESSOR |
| 71 | CIVIL ENGG. | DR.SUSHEEL KUMAR | ASSOCIATE PROFESSOR |
| 72 | CIVIL ENGG. | MR. A.R.KONGAN | ASSISTANT PROFESSOR |
| 73 | CIVIL ENGG. | MR.B.R.G.ROBERT | ASSISTANT PROFESSOR |
| 74 | CIVIL ENGG. | DR. BHARAT JHAMNANI | ASSISTANT PROFESSOR |
| 75 | CIVIL ENGG. | DR. RAJU SARKAR | ASSISTANT PROFESSOR |

| S. No. | DEPARTMENT/PROGRAM | FACULTY NAME | DESIGNATION |
|---|---|---|---|
| 76 | CIVIL ENGG. | DR. MUNENDER KUMAR | ASSISTANT PROFESSOR |
| 77 | CIVIL ENGG. | DR. T.VIJAY KUMAR | ASSISTANT PROFESSOR |
| 78 | CIVIL ENGG. | SH. HARIKESH DUBEY | ASSISTANT PROFESSOR |
| 79 | CIVIL ENGG. | SH. RITURAJ | ASSISTANT PROFESSOR |
| 80 | Computer Sci. & Engg. | PROF. DAYA GUPTA | PROFESSOR |
| 81 | Computer Sci. & Engg. | DR. KAPIL SHARMA | ASSOCIATE PROFESSOR |
| 82 | Computer Sci. & Engg. | DR. RAJINI JINDAL | ASSOCIATE PROFESSOR |
| 83 | Computer Sci. & Engg. | DR. VINOD KUMAR | ASSOCIATE PROFESSOR |
| 84 | Computer Sci. & Engg. | MR. MANOJ KUMAR | ASSISTANT PROFESSOR |
| 85 | Computer Sci. & Engg. | MR. RAHUL | ASSOCIATE PROFESSOR |
| 86 | Computer Sci. & Engg. | DR. AKSHI KUMAR | ASSISTANT PROFESSOR |
| 87 | Computer Sci. & Engg. | MR. RAJESH KUMAR YADAV | ASSISTANT PROFESSOR |
| 88 | Computer Sci. & Engg. | MR. ROHIT BENIWAL | ASSISTANT PROFESSOR |
| 89 | Computer Sci. & Engg. | MR.NIPUN BANSAL | ASSISTANT PROFESSOR |
| 90 | Computer Sci. & Engg. | MS.MINNI JAIN | ASSISTANT PROFESSOR |
| 91 | Computer Sci. & Engg. | MR. SANJAY KUMAR | ASSISTANT PROFESSOR |
| 92 | Computer Sci. & Engg. | DR. RUCHIKA MALHOTRA | ASSISTANT PROFESSOR |
| 93 | Computer Sci. & Engg. | MS. ABHILASHA SHARMA | ASSISTANT PROFESSOR |
| 94 | Computer Sci. & Engg. | MS.DIVYASHIKHA SETHIA | ASSISTANT PROFESSOR |
| 95 | Computer Sci. & Engg. | MR. SANJAY PATIDAR | ASSISTANT PROFESSOR |
| 96 | Computer Sci. & Engg. | MS. SONIKA DAHIYA | ASSISTANT PROFESSOR |
| 97 | COMPUTER SCI. & ENGG. | MR. PRASHANT GIRIDHAR SHAMBHARKAR | ASSISTANT PROFESSOR |
| 98 | ELECTRONICS AND COMMUNICATION ENGG. | DR. ASOK DE (ON LIEN) | PROFESSOR |

| S. No. | DEPARTMENT/PROGRAM | FACULTY NAME | DESIGNATION |
|---|---|---|---|
| 99 | ELECTRONICS AND COMMUNICATION ENGG. | DR. RAJIV KAPOOR (ON DIVERTED CAPACITY) | PROFESSOR |
| 100 | ELECTRONICS AND COMMUNICATION ENGG. | DR.O.P. VERMA (DIVERTED CAPACITY AT G.B.PANT ENGG. COLLEGE W.E.F 19.04.2017) | PROFESSOR |
| 101 | ELECTRONICS AND COMMUNICATION ENGG. | DR. N.S.RAGHAVA | PROFESSOR |
| 102 | ELECTRONICS AND COMMUNICATION ENGG. | DR. S.INDU | PROFESSOR |
| 103 | ELECTRONICS AND COMMUNICATION ENGG. | DR. RAJESHWARI PANDEY | PROFESSOR |
| 104 | ELECTRONICS AND COMMUNICATION ENGG. | DR. NEETA PANDEY | PROFESSOR |
| 105 | ELECTRONICS AND COMMUNICATION ENGG. | DR. JEEBANANDA PANDA | ASSOCIATE PROFESSOR |
| 106 | ELECTRONICS AND COMMUNICATION ENGG. | MR. RAJESH ROHILLA | ASSOCIATE PROFESSOR |
| 107 | ELECTRONICS AND COMMUNICATION ENGG. | MR. ALOK KUMAR SINGH | ASSOCIATE PROFESSOR |
| 108 | ELECTRONICS AND COMMUNICATION ENGG. | MR. MAHIPAL SINGH CHOUDHARY | ASSOCIATE PROFESSOR |
| 109 | ELECTRONICS AND COMMUNICATION ENGG. | MR. RAJESH BIROK | ASSOCIATE PROFESSOR |
| 110 | ELECTRONICS AND COMMUNICATION ENGG. | MR. DEVA NAND | ASSISTANT PROFESSOR |
| 111 | ELECTRONICS AND COMMUNICATION ENGG. | DR. DINESH KUMAR VISHWAKARMA | ASSISTANT PROFESSOR |
| 112 | ELECTRONICS AND COMMUNICATION ENGG. | MR. AVINASH RATRE | ASSISTANT PROFESSOR |

| S. No. | DEPARTMENT/PROGRAM | FACULTY NAME | DESIGNATION |
|---|---|---|---|
| 113 | ELECTRONICS AND COMMUNICATION ENGG. | MR. AJAI K. GUATAM | ASSISTANT PROFESSOR |
| 114 | ELECTRONICS AND COMMUNICATION ENGG. | MRS. N.JAYANTHI | ASSISTANT PROFESSOR |
| 115 | ELECTRONICS AND COMMUNICATION ENGG. | DR. SUDIPTA MAJUMDAR | ASSISTANT PROFESSOR |
| 116 | ELECTRONICS AND COMMUNICATION ENGG. | DR. MALTI BANSAL | ASSISTANT PROFESSOR |
| 117 | ELECTRONICS AND COMMUNICATION ENGG. | DR. NIDHI GOEL (ON LIEN) | ASSISTANT PROFESSOR |
| 118 | ELECTRONICS AND COMMUNICATION ENGG. | DR. PRIYANKA JAIN | ASSISTANT PROFESSOR |
| 119 | ELECTRONICS AND COMMUNICATION ENGG. | MR. ANURAJ CHAUHAN | ASSISTANT PROFESSOR |
| 120 | ELECTRONICS AND COMMUNICATION ENGG. | MR. PIYUSH TEWARI | ASSISTANT PROFESSOR |
| 121 | ELECTRONICS AND COMMUNICATION ENGG. | MS. YASHNA SHARMA | ASSISTANT PROFESSOR |
| 122 | ELECTRONICS AND COMMUNICATION ENGG. | MR. ANAND KUMAR | ASSISTANT PROFESSOR |
| 123 | ELECTRICAL ENGG. | DR. MADHUSHUDAN SINGH | PROFESSOR |
| 124 | ELECTRICAL ENGG. | DR.NARENDRA KUMAR (I) | PROFESSOR |
| 125 | ELECTRICAL ENGG. | DR. PRAGATI KUMAR | PROFESSOR |
| 126 | ELECTRICAL ENGG. | DR. UMA NANAGIA | PROFESSOR |
| 127 | ELECTRICAL ENGG. | DR. VISHAL VERMA | PROFESSOR |
| 128 | ELECTRICAL ENGG. | DR. NARENDRA KUMAR(II) | PROFESSOR |
| 129 | ELECTRICAL ENGG. | DR. SUMAN BHOWMICK | PROFESSOR |
| 130 | ELECTRICAL ENGG. | DR. RACHNA GARG | PROFESSOR |

| S. No. | DEPARTMENT/PROGRAM | FACULTY NAME | DESIGNATION |
|---|---|---|---|
| 131 | ELECTRICAL ENGG. | DR. BHARAT BHUSHAN | PROFESSOR |
| 132 | ELECTRICAL ENGG. | DR. S.T.NAGARAJAN | PROFESSOR |
| 133 | ELECTRICAL ENGG. | DR. J.N.RAI | PROFESSOR |
| 134 | ELECTRICAL ENGG. | DR. N.K JAIN | PROFESSOR |
| 135 | ELECTRICAL ENGG. | DR. D.R. BHASKAR | PROFESSOR |
| 136 | ELECTRICAL ENGG. | MR. NEERAJ KUMAR BHAGAT | ASSOCIATE PROFESSOR |
| 137 | ELECTRICAL ENGG. | DR. ALKA SINGH | ASSOCIATE PROFESSOR |
| 138 | ELECTRICAL ENGG. | DR. MADAN MOHAN TRIPATHI | ASSOCIATE PROFESSOR |
| 139 | ELECTRICAL ENGG. | DR.MUKHTIAR SINGH | ASSOCIATE PROFESSOR |
| 140 | ELECTRICAL ENGG. | DR. DHEERAJ JOSHI | ASSOCIATE PROFESSOR |
| 141 | ELECTRICAL ENGG. | MR.RAM BHAGAT | ASSOCIATE PROFESSOR |
| 142 | ELECTRICAL ENGG. | DR.PRIYA MAHAJAN | ASSOCIATE PROFESSOR |
| 143 | ELECTRICAL ENGG. | MR. SUDARSHAN KUMAR BABU VALLURU | ASSOCIATE PROFESSOR |
| 144 | ELECTRICAL ENGG. | MR. DULI CHAND MEENA | ASSOCIATE PROFESSOR |
| 145 | ELECTRICAL ENGG. | DR. MINISREEJETH K. | ASSOCIATE PROFESSOR |
| 146 | ELECTRICAL ENGG. | MR. PREM PRAKASH | ASSISTANT PROFESSOR |
| 147 | ELECTRICAL ENGG. | MS. BHAVNESH JAINT | ASSISTANT PROFESSOR |
| 148 | ELECTRICAL ENGG. | MR.ASHISH RAJESWAR KULKARNI | ASSISTANT PROFESSOR |
| 149 | ELECTRICAL ENGG. | MR. ANIRUDDHA BARUN KUMAR BHATTACHARYYA | ASSISTANT PROFESSOR |
| 150 | ELECTRICAL ENGG. | MR. RAMJEE LAL MEENA | ASSISTANT PROFESSOR |
| 151 | ELECTRICAL ENGG. | MR. KULDEEP SINGH | ASSISTANT PROFESSOR |
| 152 | ELECTRICAL ENGG. | DR. MOHMMAD RIZWAN | ASSISTANT PROFESSOR |

| S. No. | DEPARTMENT/PROGRAM | FACULTY NAME | DESIGNATION |
|---|---|---|---|
| 153 | ELECTRICAL ENGG. | MS.GARIMA | ASSISTANT PROFESSOR |
| 154 | ELECTRICAL ENGG. | MS. ANKITA ARORA | ASSISTANT PROFESSOR |
| 155 | ELECTRICAL ENGG. | MR. HIMANSHU | ASSISTANT PROFESSOR |
| 156 | ELECTRICAL ENGG. | MR. ANUP KR. MANDPURA | ASSISTANT PROFESSOR |
| 157 | ELECTRICAL ENGG. | MR. SIKANDAR ALI KHAN | ASSISTANT PROFESSOR |
| 158 | ELECTRICAL ENGG. | MR. SAURABH MISHRA | ASSISTANT PROFESSOR |
| 159 | ENVIRONMENT ENGG. | MS. LOVLEEN GUPTA | ASSISTANT PROFESSOR |
| 160 | ENVIRONMENT ENGG. | DR.RAJEEV KUMAR MISHRA | ASSISTANT PROFESSOR |
| 161 | ENVIRONMENT ENGG. | DR.HARITASH ANIL KUMAR | ASSISTANT PROFESSOR |
| 162 | ENVIRONMENT ENGG. | MS. GEETA | ASSISTANT PROFESSOR |
| 163 | ENVIRONMENT ENGG. | SH. GOUR ANUNAY ASHOK KUMAR | ASSISTANT PROFESSOR |
| 164 | HUMANITIES | DR. SEEMA SINGH | ASSOCIATE PROFESSOR |
| 165 | HUMANITIES | MS. SAROJ BALA | ASSISTANT PROFESSOR |
| 166 | HUMANITIES | DR. NAND KUMAR | ASSISTANT PROFESSOR |
| 167 | HUMANITIES | MS. PARINITA SINHA | ASSISTANT PROFESSOR |
| 168 | INFORMATION TECHNOLOGY | DR. RAHUL KATARYA | ASSISTANT PROFESSOR |
| 169 | INFORMATION TECHNOLOGY | MS. RITU AGARWAL | ASSISTANT PROFESSOR |
| 170 | INFORMATION TECHNOLOGY | MS. ANAMIKA CHAUHAN | ASSISTANT PROFESSOR |
| 171 | INFORMATION TECHNOLOGY | DR. SEBA SUSAN RANJAN | ASSISTANT PROFESSOR |
| 172 | INFORMATION TECHNOLOGY | DR. ANIL SINGH PARIHAR | ASSISTANT PROFESSOR |

| S. No. | DEPARTMENT/PROGRAM | FACULTY NAME | DESIGNATION |
|---|---|---|---|
| 173 | INFORMATION TECHNOLOGY | MS. PRIYANKA MEEL | ASSISTANT PROFESSOR |
| 174 | INFORMATION TECHNOLOGY | MR. JASRAJ MEENA | ASSISTANT PROFESSOR |
| 175 | MECHANICAL ENGG. | DR. SAGAR MAJI (DIVERTED CAPACITY AT DITE) | PROFESSOR |
| 176 | MECHANICAL ENGG. | DR. S.K.GARG | PROFESSOR |
| 177 | MECHANICAL ENGG. | DR. NAVEEN KUMAR | PROFESSOR |
| 178 | MECHANICAL ENGG. | DR.SAMSHER | PROFESSOR |
| 179 | MECHANICAL ENGG. | DR. R.S.MISHRA | PROFESSOR |
| 180 | MECHANICAL ENGG. | DR.VIKAS RASTOGI | PROFESSOR |
| 181 | MECHANICAL ENGG. | DR.D.S.NAGESH | PROFESSOR |
| 182 | PRODUCTION & INDUSTRIAL. ENGG. | DR.REETA WATTAL | PROFESSOR |
| 183 | PRODUCTION & INDUSTRIAL. ENGG. | DR.VIPIN | PROFESSOR |
| 184 | MECHANICAL ENGG. | DR. RAJ KUMAR SINGH | PROFESSOR |
| 185 | MECHANICAL ENGG. | DR.AMIT PAL | PROFESSOR |
| 186 | MECHANICAL ENGG. | DR. RAMESH CHANDRA SINGH | PROFESSOR |
| 187 | PRODUCTION & INDUSTRIAL. ENGG. | DR.RANGANATHAN M.S. | PROFESSOR |
| 188 | PRODUCTION & INDUSTRIAL. ENGG. | DR. QASIM MURTAZA(ON LIEN) | PROFESSOR |
| 189 | MECHANICAL ENGG. | DR.ATUL KUMAR AGRAWAL | PROFESSOR |
| 190 | MECHANICAL ENGG. | DR.BHARAT BHUSHAN ARORA | ASSOCIATE PROFESSOR |

| S. No. | DEPARTMENT/PROGRAM | FACULTY NAME | DESIGNATION |
|---|---|---|---|
| 191 | MECHANICAL ENGG. | MR. VISHAV KAMAL | ASSOCIATE PROFESSOR |
| 192 | MECHANICAL ENGG. | DR. RAVINDERJIT SINGH WALIA | ASSOCIATE PROFESSOR |
| 193 | MECHANICAL ENGG. | DR.RAJESH KUMAR | ASSOCIATE PROFESSOR |
| 194 | MECHANICAL ENGG. | MR.P.V.RAM KUMAR | ASSOCIATE PROFESSOR |
| 195 | PRODUCTION & INDUSTRIAL. ENGG. | DR. ASHOK KUMAR MADAN | ASSOCIATE PROFESSOR |
| 196 | WORKSHOP | MR.PRADEEP K.JAIN | ASSOCIATE PROFESSOR |
| 197 | MECHANICAL ENGG. | DR. RAJIV CHAUDHARY | ASSOCIATE PROFESSOR |
| 198 | MECH, ENGG. | DR. VIJAY GAUTAM | ASSOCIATE PROFESSOR |
| 199 | MECH, ENGG. | DR. AKHILESH ARORA | ASSOCIATE PROFESSOR |
| 200 | MECH, ENGG. | DR.MANJUNATH K | ASSISTANT PROFESSOR |
| 201 | MECH, ENGG. | MR.SANJAY KUMAR | ASSISTANT PROFESSOR |
| 202 | MECH, ENGG. | DR.MAHENDRA SINGH NIRANJAN | ASSISTANT PROFESSOR |
| 203 | MECH, ENGG. | MR.KROVVIDISRINIVAS | ASSISTANT PROFESSOR |
| 204 | MECH, ENGG. | MR.NAUSHAD AHMAD ANSARI | ASSISTANT PROFESSOR |
| 205 | MECH, ENGG. | MR.ROOP LAL | ASSISTANT PROFESSOR |
| 206 | MECH, ENGG. | MR.MOHAMMAD ZUNAID | ASSISTANT PROFESSOR |
| 207 | MECH, ENGG. | DR.GIRISH KUMAR | ASSISTANT PROFESSOR |
| 208 | MECH, ENGG. | MR. PARAS KUMAR | ASSISTANT PROFESSOR |
| 209 | MECH, ENGG. | DR.PRAVIN KUMAR | ASSISTANT PROFESSOR |
| 210 | PRODUCTION & INDUSTRIAL. ENGG. | DR. SAURABH AGARWAL | ASSISTANT PROFESSOR |
| 211 | WORKSHOP | MR. N.YUVRAJ | ASSISTANT PROFESSOR |

| S. No. | DEPARTMENT/PROGRAM | FACULTY NAME | DESIGNATION |
|---|---|---|---|
| 212 | MECH, ENGG. (with Specialization in Automotive Engg) | DR. RAGHVENDRA GAUTAM | ASSISTANT PROFESSOR |
| 213 | MECH, ENGG. (with Specialization in Automotive Engg) | MS. NAVRITI GUPTA | ASSISTANT PROFESSOR |
| 214 | MECH, ENGG. (with Specialization in Automotive Engg) | MS. SUSHILA RANI | ASSISTANT PROFESSOR |
| 215 | DELHI SCHOOL OF MANAGEMENT | DR. PRADEEP KUMAR SURI | PROFESSOR |
| 216 | DELHI SCHOOL OF MANAGEMENT | DR. G.P MAHESHWARI | PROFESSOR |
| 217 | DELHI SCHOOL OF MANAGEMENT | DR. RAJAN YADAV | ASSOCIATE PROFESSOR |
| 218 | DELHI SCHOOL OF MANAGEMENT | DR. SHIKHA N KHERA | ASSISTANT PROFESSOR |
| 219 | DELHI SCHOOL OF MANAGEMENT | DR. VIKAS GUPTA | ASSISTANT PROFESSOR |
| 220 | DELHI SCHOOL OF MANAGEMENT | DR. ARCHNA SINGH | ASSISTANT PROFESSOR |
| 221 | DELHI SCHOOL OF MANAGEMENT | MS. MEHA KANDAPAL | ASSISTANT PROFESSOR |