



**AUTONOMOUS**

**B. Tech. Programmes**

**in**

**CIVIL ENGINEERING**

**MECHANICAL ENGINEERING**

**ELECTRICAL AND ELECTRONICS ENGINEERING**

**ELECTRONICS AND COMMUNICATION ENGINEERING**

**COMPUTER SCIENCE AND ENGINEERING**

**INFORMATION TECHNOLOGY**

**CSE - INTERNET OF THINGS**

**CSE - ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING**

**CSE IOT & CYBER SECURITY WITH BLOCKCHAIN TECHNOLOGIES**

**ARTIFICIAL INTELLIGENCE AND DATA SCIENCE**

**ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING**

**FIRST YEAR**

**STUDENT HANDBOOK**

**ACADEMIC YEAR: 2022-23**



**Namburu, Pedakakani (Mandal), Guntur (Dist.) - 522508**

**Website: [www.vvitguntur.com](http://www.vvitguntur.com)**

# **VASIREDDY VENKATADRI INSTITUTE OF TECHNOLOGY AUTONOMOUS**

**A unit of Social Educational Trust  
Permanent Affiliation to JNTUK, Kakinada  
Approved by AICTE, New Delhi  
ISO 9001: 2015 Certification  
Accredited By NAAC with 'A' Grade  
B. Tech. ME, ECE, CSE, CE, EEE& IT Programs  
Accredited By NBA  
Nodal Centre of APSSDC  
SIEMENS Centre of Excellence  
Google Code Lab  
Dassault 3D Experience Lab**



**FIRST YEAR  
STUDENT HANDBOOK  
ACADEMIC YEAR: 2022-23**



**Namburu, Pedakakani (Mandal), Guntur (Dist.) - 522508**

**Website: [WWW.vvitguntur.com](http://WWW.vvitguntur.com)**

**email: [vvitn@rediffmail.com](mailto:vvitn@rediffmail.com); [principaloffice@vvit.net](mailto:principaloffice@vvit.net)**

## VISION

*To impart quality education through exploration and experimentation and generate socially conscious engineers, embedding ethics and values, for the advancement in science and technology.*

## MISSION

- To educate students with a practical approach to dovetail them to industry-needs.
- To govern the institution with a proactive and professional management with passionate teaching faculty.
- To provide holistic and integrated education and achieve over all development of students by imparting scientific and technical, social and cognitive, managerial and organizational skills.
- To compete with the best and be the most preferred institution of the studios and the scholarly.
- To forge strong relationships and linkage with the industry.

## OBJECTIVES

- *Equip the institute with state-of-the-art infrastructure comparable to the best in the industry.*
- *Tap the resources of the best minds in the field as faculty and visiting faculty.*
- *Groom students to become global entrepreneurs and responsible citizens.*
- *Provide financial assistance to meritorious students.*
- *Requisition the services of the best HR managers to place our students in reputed industries.*
- *Provide conducive atmosphere to the faculty for Research & Development and ensure active participation of the students.*

**VVIT IS A RAGGING-FREE & LITTER-FREE CAMPUS**  
**ANTI-RAGGING HELP LINES: 9490772244, 9703555935**

**In Case of Emergency Call Toll Free No:**

**1800-425-1288**

**JNTUK College Code: BQ**

**EAMCET Code: VVIT**

## Programme Outcomes

All the programmes offered to the students ensure that the following qualities, skills, and understandings are developed by the students.

**1. Engineering knowledge:** Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.

**2. Problem analysis:** Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

**3. Design/development of solutions:** Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

**4. Conduct investigations of complex problems:** Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

**5. Modern tool usage:** Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modelling to complex engineering activities with an understanding of the limitations.

**6. The engineer and society:** Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

**7. Environment and sustainability:** Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

**8. Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

**9. Individual and teamwork:** Function effectively as an individual and as a member or leader in diverse teams and in multidisciplinary settings.

**10. Communication:** Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

**11. Project management and finance:** Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

**12. Life-long learning:** Recognize the need for and have the preparation and ability to engage in independent and lifelong learning in the broadest context of technological change.

## Discipline

**Attendance:** Regular attendance to the classes is given top priority in this college. All the students are encouraged to maintain 100% attendance. Students who do not meet the mandatory attendance requirement will not be permitted to write the examinations held by the University.

**Leave of Absence:** A student cannot be absent from college without a leave letter. Prior permission from the class teacher should be taken. Students and parents may contact the class teacher for further details. Please refer to the faculty details page in this Handbook for Contact numbers and email IDs of faculty handling I B. Tech classes. Documentary evidence should be produced for leave taken by the students on medical grounds.

**Litter Free Zone:** Cleanliness on campus and inside the classrooms is given a high priority in this college. Do no litter the college premises with pieces of paper, unwanted pens, pencils and notebooks. Disciplinary action would be taken against LITTERBUGS.

**Behavior:** Students should learn to behave very professionally. They are not allowed to speak loudly on the campus and in the classrooms. They should communicate in polite English while on campus. Any untoward behaviour of the student will be treated very severely, and action will be initiated on the recommendation of the Disciplinary Committee.

**Cell Phones:** Use of cell phones, cam cells, i-pods/i-pads, etc. is banned on the college campus. If any student is found to possess them, the banned item(s) would be confiscated and destroyed immediately, and severe disciplinary action will be initiated against the student.

**Motorcycles:** Students should avoid coming to the college on two-wheeler motor vehicles like motor bikes, scooters, etc. Severe action will be taken against violators.

**Ragging & Teasing:** All the students should sign a declaration that they would abide by the anti-ragging laws enforced by the Governments of India and Andhra Pradesh. The guilty will be punished basing on the recommendations of the Anti-Ragging Committee.

**Laptops:** Students are encouraged to bring laptops regularly to the college.

## Dress Code

Students should come in uniform prescribed by the College on all days except Fridays. They should also come in uniform to all the examinations like Mid-Term, Practical Internal & External and Semester-End, Supplementary and Regular University examinations **EVEN THOUGH THE DAY OF EXAMINATION IS A FRIDAY.**

**Uniform for Boys:** Half Sleeved Shirt tucked into formal cut trousers, with black shoes. Low waist/hip and other trendy cut trousers are not permitted.

**Uniform for Girls:** Half-sleeved kameez, comfortable salwar and dupatta. Girls can avoid wearing high heels. Improper dress code leads to punishment.

**IDENTITY CARDS:** Wearing ID tag is mandatory. Loss or damage to IDs should be immediately informed to the office.

**Friday Dress:** Boys should come in semi-formals with their shirts tucked-in and wear shoes. Students are not allowed to wear T-shirts, cargos, low waists, shorts, and ultra-short length clothes.

## STUDIES

**Lectures:** Students can go through the lecture plans for details regarding their classroom teaching.

**Lab Instruction:** Practical application is as important as theoretical knowledge.

- I. Detailed lab manuals are provided to students for reference.
- II. Students should not miss the lab sessions.
- III. 100% attendance is the pre-condition to become eligible for the Lab Examination.
- IV. Every student should maintain lab documents like an observation book, a lab manual and a lab record and get them evaluated regularly.
- V. Students without proper dress code and valid lab documents will not be permitted to attend the practical sessions.

**Faculty Interaction:** Students are encouraged to ask for doubts clarifications regarding subject matter.

**Remedial Teaching:** Students with below average performance must undergo Remedial Teaching Sessions.

**Peer Teaching:** Classmates are encouraged to help each other through supervised peer teaching.

**Seminars:** Students are encouraged to make oral presentations about their interest Activities

**SAC:** Students Activity Council of the college manages several students' clubs alongside organizing competitive extra-curricular and co-curricular activities. VVIT SAC observes prominent international and national days on the campus

while encouraging the students to learn and showcase their talents in cultural and literary events.

**Clubs:** Two Hours are allocated for clubs that are organized by SAC every week. Experts in the chosen fields train the students in their fields of interest. Every student should register in any one of the following clubs. Membership to clubs is open and free.

- a. Chairman's Club
- b. Literary Appreciation Club
- c. Movie Appreciation Club
- d. Photography Club
- e. Political & Social Awareness Club
- f. Music Club
- g. Dance Club
- h. Yoga and Meditation Club
- i. Painting Club
- j. Theatre Club
- k. Animation and Graphics Club
- l. Martial Arts Club
- m. Sports Club
- n. Robotics Club
- o. Telugu Appreciation Club
- p. Green Club
- q. Culinary Club



**Sports:** Indoor games like Table Tennis, Carroms, and Chess can be played in the College Sports Room. Facility to play out-door games like Volleyball, Basketball, Tennis, Shuttle Badminton, Cricket, Kabaddi, Kho-Kho is available.

**VIVA VVIT:** Annual Intercollegiate and Inter-University Cultural and Sporting Competitions give an opportunity for our students to interact with students from other colleges. There is a big Open-Air Auditorium – first of its kind in AP to serve as a venue for these events. College Annual Day celebrations and Theatre Day are celebrated

**Generation Next Technical Papers Contest:** Annual National Technical Paper Presentation Competitions conducted by the individual Departments of this college allow our students to compete with academic excellence of other professional colleges in the country.

**NCC:** Students are encouraged to enroll in Two NCC Battalions – 10 Andhra Girls Battalion and 2A Armed Squadron for Boys.

**NSS:** Students are motivated to volunteer in Service to Community programmes organized by NSS cell of the college. Plantation of saplings, Adopting Villages, Blood Donation Camps under the supervision of Red Cross Society, Training Rural Unemployed Youth in Technical Skills and Communication Skills, Flood Relief Operations, Medical Check-ups, Health Education, Socio-Political Awareness Campaigns, Green Society Initiatives, etc. are some of the regular activities organized by the VVIT NSS Cell.

**Extra-Murals:** The College encourages the students to participate in state and national level seminars and competitions organized by reputed institutions like IITs, IIITs, NITs, JNTUK, Universities etc. Students are also deputed for apprenticeship /Summer/Winter Internship Programmes to industries like Infosys, ITC, VTPS, KTPS, BSNL, EFFTRONICS, NTTP, Railways etc. and institutions like IITs. Students will be taken on Industrial Tours and Picnics.

**Intra-Murals:** Intra-Departmental competitions are held in Technical, Literary and Cultural events for the students as part of Engineers Day and College Day celebrations.

**Student Counseling:** Each student is assigned to a member of the faculty who guides and assists the student throughout his/her study at the institute, by providing appropriate assistance at each stage of the student's development, growth, or progress.

**Membership in Professional Bodies:**

Students are encouraged to become members in Professional Bodies like Institute of Engineers, ISHRAE, Indian Value Engineering Society and organize seminars, workshops, colloquies as Student Chapters.

**Etiquette**

Respect: Greeting elders is our tradition. Let us follow it on and off the campus. Greet your teachers appropriately when you meet them.

**Dining Habits: All our actions and behaviors should highlight our etiquette.**

- i. Do not litter the college premises with food wrappers. Do not dispose them off the classroom windows. Use dustbins.
  - ii. Follow decorum while eating in the canteen. Make way for others to purchase from the counters. Do not crowd at the canteen.
  - iii. While eating in the classrooms take care not to spill food on the desks and floor.
  - iv. Do not wash your hands with mineral water at the Mineral Water Dispensers. Use the wash basins instead.
- Do not chew on toffees and the like during the class/lab work. Compulsive chewers are punished.

**Politeness:** Students should interact in a polite way with everyone.

**Campus Talk: STUDENTS SHOULD SPEAK IN ENGLISH WHEN THEY COMMUNICATE WITH THE FACULTY OR FRIENDS.**

## FACILITIES

**Library:** Each student is issued two Library Cards. Textbooks and other books on the lending list can be borrowed using the cards. They should return the books on or before the due date. A student book bank is operated in the library. A complete set of First year Textbooks for a discounted price is issued to the students under this scheme. Students should return the books at the end of the semester in good condition to get the refund/books for the next semester. For detailed information regarding the library facilities meet the librarian.

**Digital Library:** Students can access online journals DELNET and video lectures from NPTEL and CoEeRD portal of JNTUK.

**Hostels:** Separate Hostels for boys and girls are provided. Absolute discipline should be maintained during the stay in the hostels. The warden is the final authority. While the Boys hostel is in Guntur city, the Girls hostel is on college campus.

### Transport

- i. A fleet of **85** buses operate in different directions from Guntur and its neighboring areas.
- ii. Students should use college transportation only.
- iii. Students must occupy the seats allotted to them in the buses.
- iv. Each student is encouraged to buy an English newspaper and read it in the bus during the journey.
- v. They should not talk, sing, or disturb their fellow students while travelling.
- vi. Causing disturbance to others or misbehavior is not tolerated in the buses. However, they may just fall asleep in the buses if they feel like. Offenders shall be made to alight from the bus by the bus in-charge.
- vii. Students are responsible for the fitness of the seats they occupy. Any damage caused to the bus including the damaging of seats will be treated as a severe offense and the offenders would be duly penalized basing on the report of the bus in-charge.

**Tuck-Shop:** Stationery, pens, blank CDs, snacks, biscuits, chocolates, soft drinks, ice-creams, coffee and tea are available here.

**Canteen:** Hygienic food is served at no profit and no loss basis to students in the college canteen. Please do not waste food as it is served unlimited.

**Toilets:** Do not hold conferences inside the toilets as they might delay an urgent and needy user. Flush the toilets after use and wash your hands. Help us to keep them clean and healthy.

**Xerox:** Photocopying facility at nominal price is available in the reprographics section of the college library.

**ATM:** 24x7 ATM facility that accepts cards of all banks is available on campus.

**Grievance Cell:** A student grievance cell is available to the students round the clock with members from senior faculty to redress any student grievance that may arise. There is a special Women's Grievance Cell to serve the gender sensitive needs of the girl students exclusively.

**First-Aid & Medical Care:** A 24x7 Health Cell on the campus provides first-aid and medical attention to the needy students.

**Mineral Water:** Two sophisticated mineral water plants supply safe and hygienic water to the students on the campus. Mineral water dispensers are arranged at designated water holes for students' convenience.

**Green Power:** The College has 250 KW solar power plant apart from 200 KVA generator to ensure uninterrupted power supply.

**IUCEE NEP:** A project on teaching learning process following P<sup>2</sup>BL- Problem Based Learning and Project Based Learning – modelled on National Education Policy 2020 framework is implemented under the guidance of IUCEE in the first year B. Tech programme. Select students are trained by international experts in six mini courses online monitored and mentored by VVIT faculty.

**Placement Cell:** The College strives at providing 100% placement assistance to its students. Students are given special training by the Placement Cell in company specific employability skills in their Final Year of study. Résumé Workshops, Group Discussions, Interview Procedures, Mock Interviews and Telephonic Interviews with professional recruiters are just a few activities of the Placement Cell.

**Entrepreneurship Development Cell:** The Entrepreneurship Development Cell (EDC) focuses on the development of entrepreneurs. The college has an understanding with ISB and organizes start-up / boot camps through TEP. The objectives of the cell are developing entrepreneurial spirit, character and personality among students that provide an opportunity to serve the society through Smart Villages.

**APSSDC:** To implement a structured and pragmatic solution to skill and up-skill the workforce in the state of A.P. and to increase employability and promote entrepreneurship in sync with Industrial growth of the State, the Government of Andhra Pradesh has established this corporation. The mission of APSSDC is to shape AP as the skilled-workforce and Knowledge hub for the world. The College is a nodal centre of this corporation. Students are trained in employability skills in this centre.

**SIEMENS Centre of Excellence:** Siemens is the top-notch PLM Solutions Company in the world widely used by various engineering companies in almost all domains. The Government of Andhra Pradesh has established CoE (Center of Excellence) in partnership with Siemens Industry Software (India) Pvt. Ltd. to acquire qualitative improvements in Technical Education, to promote Industry Academia interfacing, to give training to improve employability and to create a pool of skilled manpower catering to the industry need. This is a dedicated center containing 14 State-of-the-art Laboratories with hardware and software developed by Siemens Industry

**Google Developer Code Labs:** Google Developers Code labs are top-of-the-line Computer labs optimized for group work and mobile development. These labs help to maintain student interest in product/application development beyond the initial training given in the curriculum.

**Dassault 3D Experience Lab:** The 3D experience lab facilitates licensed software from M/s. Dassault Systems, France, to train the students and faculty members of Mechanical, Civil and Electrical Engineering Departments. This lab helps the students to implement innovative thoughts on 3D experience platform for product development. This improves students' confidence levels to work in domains such as Aerospace, Automotive and Offshore engineering.

## Finishing School

Finishing School prepares the student for the job market and makes them ready for the campus placements. Finishing School offers the students to learn from beyond the academic curriculum. This school commences right from the First Year of the B. Tech program and continues up to the Final Year.

1. **Knowledge improvement:** Training in Newspaper reading, News analysis and presentation, understanding contemporary socio-political issues and current affairs is given to all First-Year students.
2. **Life Skills:** Every student undergoes training in Life Skills right from the first semester of his/her study at the institute. Emphasis is on spoken English, Communication Skills, Employability Skills, Quantitative Aptitude, Reasoning Proficiency, Analytical and Verbal Abilities.
3. **APITA (Andhra Pradesh Information Technologies Academy):** Third year students are trained in Analytical Reasoning, Quantitative Aptitude and Functional English.
4. **CRT (Campus Recruitment Training):** Training in employability skills like quantitative aptitude, logical and analytical reasoning, verbal proficiency, etc. is given to the students from Second Year onwards. Students are given company specific placement training with Customized Modules as per the requirements of the recruiting companies.
5. **Technical Courses:** .NET, Asp, Advanced Java courses are taught to all Third-Year students, while industry-oriented branch specific courses like AUTOCAD, NX Software, ROBOTICS, CATIA, DELMIA, SIMULIA are offered to the students.
6. **Certifications:** Certification programmes like NX Software, ROBOTICS, CATIA, DELMIA, SIMULIA are offered to students in the Third Year.
7. **GATE, GRE/TOEFL/IELTS:** Students who wish to pursue Higher Education in India or abroad are offered help in preparing for those examinations in their Final Year.
8. **Guest Lectures and Seminars:** Series of lectures and seminars on comprehensive professional development of the students and National conferences are organized with eminent resource persons from industry and academics.
9. **Minors Degree:** Students of Civil Engineering, Mechanical Engineering, EEE and ECE get an opportunity to pursue courses related to Computer

Sciences to get a Minor Degree in CSE on fulfilling the necessary academic requirement.

10. **Honors Degree:** Students of all branches get an opportunity to pursue advanced courses in their branches of study to get an Honors Degree on fulfilling the necessary academic requirement.
11. **Internships:** Student Internships are encouraged, and students can undergo both online and regular internships during their period of study at the institution.

Our students are recruited by the following companies



CONSULTANCY SERVICES



Where Value and Innovation Co-exist



**Essae**<sup>®</sup>  
...for Excellence

**HGS**  
HINDUJA GLOBAL SOLUTIONS

**HCL**



**SUTHERLAND**  
GLOBAL SERVICES<sup>®</sup>



**MIRACLE MSS**  
SOFTWARE SYSTEMS, INC.

**PAXTERRA**  
SOLUTIONS  
Committed to Excellence

**IT trailblazers**  
One Source. Global Proficiency



**ATLAS SYSTEMS**  
Library Excellence Through Efficiency

**Knoah**  
Responsive, Innovative and  
Award-Winning Outsourcing Services

**CSS CORP**

Since:1985  
**electronics**<sup>®</sup>  
To provide insight for enhancing wealth

**GlobalLogic** **athenahealth**

**Quality People**

**SIEMENS**



**SEMANTICSPACE**  
TECHNOLOGIES

**L-CUBE**  
TECHNOLOGIES

**CN WATER SYSTEMS**  
A BWT PARTNER



**GlobalLogic**<sup>®</sup>

**HSBC**

**DATALAB**  
INDIA

**indus**  
TOWERS

**apps associates**  
extreme expertise

**Honeywell**



**BOSCH**

**CAD**  
CADisplay Engineering



NALSOFT



Mu Sigma

O.C.TANNER



Cognizant

VALUE MOMENTUM

wipro



## OUR MILESTONES

Year	Achievements
2007	Establishment of VVIT with four UG programmes (EEE, ECE, CSE & IT) in Engineering with an intake of 240 students and affiliation from JNTU Hyderabad and Approval from AICTE.
2008	Introducing MCA programme with an intake of 60 students and increase of intake in B. Tech CSE programme from 60 to 90. Transfer of Affiliation from JNTU Hyderabad to JNTUK, Kakinada MoU with Aptech for placement training.
2009	Increase of intake from 90 to 120 and 60 to 120 in B. Tech CSE and ECE programmes respectively. Quality policy implementation and ISO 9001: 2009 certification.
2010	Starting of B. Tech degree course in Civil Engineering with an intake of 60 students. 30 Mbps leased line with fiber optic back bone network facility MoU with Infosys – Campus Connect
2011	Starting of B. Tech course in Mechanical Engineering with an intake of 60 students Starting of P.G courses in M. Tech EEE- (VLSI & Embedded Systems) and M. Tech CSE (Shifts 1 and 2) with a total intake of 18 students each.
2012	Increase of intake to 120 in B. Tech EEE and ME programmes. Starting of P.G courses in M. Tech EEE (PE&ED) and M. Tech ECE (DE & CS)(Shift-2) with an intake of 18 students each.
2013	Increase of intake from 120 to 180 in B. Tech ECE and CSE programmes.
2014	Increase of intake to 120 and 240 for B. Tech CE and CSE programmes. Starting of P.G courses in M. Tech CE (Structural Engineering) and M. Tech ME (Machine Design) with an intake of 18 students each. Training and Placement Partnership with Co Cubes Training and Placement Partnership with Monster MoU with Social Agro Industries Nodal Centre of Andhra Pradesh State Skills Development Centre
2015	Entrepreneurship Development Cell (EDC) Boot camp. Technical Entrepreneurship Program of Indian School of Business, Hyderabad 100 mbps internet backbone Campus Wi-fi connectivity Construction of New Academic block with a plinth area of 14000 sqmts to house CoE, APSSDC, Labs and departments
2016	Recruitment and Internship MoU with Efftronics

	<p>Permanent Affiliation to JNTUK Accredited with A grade by NAAC for Five years Establishment of 15 state-of-the-art labs of Siemens Centre of Excellence through APSSDC, Govt of AP B.Tech - ECE and IT programmes are accredited by NBA for Three years MoUs with Industry for placement training, internships, and knowledge transfer. MoU with Stanford University, USA through APSSDC, for University Innovative Fellowship (UIF) program.</p>
2017	<p>Sanction of DST projects and FDPs worth INR 1 Crore Increase of intake to 180 in B.Tech IT programme. MoU with North-eastern University to setup venture development Centre. Agreement to setup Google Code lab with Google Inc., USA through APSSDC Recognised Research Centre in ECE dept by JNTUK</p>
2018	<p>B.Tech - EEE, CSE, CE and ME programmes are accredited by NBA for 3 years Sanction of 60 Lakhs by DST under FIST project. Increase of intake to 180 in B.Tech EEE &amp; ME programmes. Sanction of CM's Skill Development Centre by APSSDC Agreement to setup AI/Deep Learning Lab through Bennett University by APSSDC. Sanction of \$2 Lakhs (Rs.1.3 Crores) to setup Google Code lab by Google Inc., USA through APSSDC. AICTENBA accreditation to EEE, ME, CE and CSE Branches Establishment of 3D Experience Lab of Dassault Systems</p>
2019	<p>VVIT becomes an Autonomous institution.</p>
2020	<p>Four New Advanced B. Tech Programmes - CSM, CSO, CIC &amp; AID No.1 Private Engineering College by Times Engineering Rankings 2020 Ranked among the top 25 institutes in the Country by ARIIA Ranking 2020 Minors and Honors Degree Programmes for B. Tech students incepted</p>
2021	<p>NAAC Accreditation with A Grade is extended till 2024 One New Advanced B. Tech Programme in AIM (Artificial Intelligence and Machine Learning with an intake of 60 students. Increase of intake to 180 in B. Tech CSM programme.</p>
2022	<p>Status of JNTUK Research Centres for Civil, Mech, EEE, ECE &amp; CSE dept Increase of intake to 180 and 120 in B.Tech AIM &amp; CIC programmes respectively.</p>

**ALL INDIA COUNCIL FOR TECHNICAL EDUCATION, New Delhi**  
**NOTIFICATION**  
**Dated 01-07-2009**

Sub: Prevention and prohibition of Ragging in technical Institutions, Universities including Deemed to be Universities imparting technical education. F.No.37-3/Legal/AICTE/2009

**What constitutes Ragging?**

Ragging constitutes one or more of any of the following acts:

- a. any conduct by any student or students whether by words spoken or written or by an act which has the effect of teasing, treating or handling with rudeness a fresher or any other student;
- b. indulging in rowdy or undisciplined 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 not 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 any other student for completing the 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 or 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, posts, 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 and self-confidence 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.

**Actions to be taken against students for indulging and abetting ragging in technical institutions Universities including Deemed to be University imparting technical education:-**

1. The punishment to be meted out to the persons indulged in ragging has to be exemplary and justifiably harsh to act as a deterrent against recurrence of such incidents.
2. Every single incident of ragging a First Information Report (FIR) must be filed without exception by the institutional authorities with the local police authorities.
3. The Anti-Ragging Committee of the institution shall take an appropriate decision, with regard to punishment or otherwise, depending on the facts of each incident of ragging and nature and gravity of the incident of ragging.
4. a) Depending upon the nature and gravity of the offence as established the possible punishments for those found guilty of ragging at the institution level shall be any one or any combination of the following:-
  - (i) Cancellation of admission
  - (ii) Suspension from attending classes
  - (iii) Withholding/withdrawing scholarship/fellowship and other benefits
  - (iv) Debarring from appearing in any test/examination or other evaluation process
  - (v) Withholding results
  - (vi) Debarring from representing the institution in any regional, national or international meet, tournament, youth festival, etc.
  - (vii) Suspension/expulsion from the hostel
  - (viii) Rustication from the institution for period ranging from 1 to 4 semesters
  - (ix) Expulsion from the institution and consequent debarring from admission to any other institution.
  - (x) Collective punishment: when the persons committing or abetting the crime of ragging are not identified, the institution shall resort to collective punishment as a deterrent to ensure community pressure on the potential raggings.

Ragging 

# Say Absolutely No to Ragging

1. Ragging is prohibited as per Act 26 of A.P. Legislative Assembly, 1997.
2. Ragging entails heavy fines and/or imprisonment.
3. Ragging invokes suspension and dismissal from the College.
4. Outsiders are prohibited from entering the College and Hostel without permission.
5. Girl students must be in their hostel rooms by 7.00 p.m.
6. All the students must carry their Identity Cards and show them when demanded.
7. The Principal and the Wardens may visit the Hostels and inspect the rooms any time.

**In Case of Emergency**

**CALL TOLL FREE NO.: 18004251288**

**Let us make VVIT**

**A Ragging Free Campus**

Ragging

## Prohibition of Ragging in Educational Institutions Act 26 of 1997

### Salient Features

- Ragging within or outside any educational institution is prohibited.
- Ragging means doing an act which causes or is likely to cause Insult or Annoyance of Fear or Apprehension or Threat or Intimidation or outrage of modesty or Injury to a student.

# RAGGING

## Prohibition of Ragging in Educational Institutions Act 26 of 1997

### Salient Features :

- Ragging within or outside any educational institution is Prohibited.
- Ragging means doing an act which causes or is likely to cause Insult or Annoyance of Fear or Apprehension or Threat or Intimidation or outrage of modesty or Injury to a student.

Imprisonment upto			
Teasing Embarrassing and Humiliation	6 Months	+	Rs. 1000/-
Assaulting or using criminal force or criminal intimidation	1 Year	+	Rs. 2000/-
Wrongfully restraining or confining or causing hurt	2 Years	+	Rs. 5000/-
Causing grievous hurt, kidnaping or rape or committing unnatural offence	5 Years	+	Rs. 10,000/-
Causing death or abetting suicide	10 Years	+	Rs. 50,000/-

## Academic Calendar 2021-22

Orientation Programme: 9 October 2022

Student Induction Programme: 26 – 15 Oct 2022

### B. Tech I Year I Semester

Description	From	To	Weeks
I Unit of Instruction	17/10/2022	10/12/2022	8
I Mid Examinations	05/12/2022	10/12/2022	1
II Unit of Instruction	12/12/2022	04/02/2023	8
II Mid Examinations	31/01/2022	04/02/2023	1
Preparation and Practical Examinations	06/02/2023	11/02/2023	1
Semester End Examinations	13/02/2023	25/02/2023	2

### B. Tech I Year II Semester

Description	From	To	Weeks
Commencement of Class work	27/02/2023		
I Unit of Instruction	27/02/2023	22/04/2023	8
I Mid Examinations	17/04/2023	22/04/2023	1
II Unit of Instruction	24/04/2023	17/06/2023	8
II Mid Examinations	12/06/2023	17/06/2023	1
Preparation and Practical Examinations	19/06/2023	24/06/2023	1
Semester End Examinations	26/06/2023	08/07/2023	2

**Commencement of II-I Class work 22/08/2022**

### List of Holidays

Gandhi Jayanthi	02 Oct 2022	Holi	08 Mar 2023
Dussehara	03-08 Oct 2022	Ugadi	22 Mar 2023
Deepavali	24 Oct 2022	Sri Rama Navami	30 Mar 2023
Balotsav 2022	12-13 Nov 2022	Babu Jagjivanram Jayanthi	05 Apr 2023
Viva VVIT 2022	22-24 Dec 2022	Good Friday	07 Apr 2023
Christmas	25 Dec 2022	Ambedkar's Jayanthi	14 Apr 2023
Sankranti	13-15 Jan 2023	Eid ul Fitir Ramzan	22 Apr 2023
Republic Day	26 Jan 2023	Eid ul Zuha Bakrid	29 Jun 2023
Maha Siva Ratri	18 Feb 2023	Mohharram	29 Jul 2023

Note: Exact dates of some festivals might change according to religious decisions made

## ACADEMIC REGULATIONS (R20)

### **Applicable for the students of B.Tech., (Regular-Honors/Minor) from the Academic Year 2020-21 onwards**

The B. Tech., Degree of Jawaharlal Nehru Technological University Kakinada, Kakinada shall be conferred on candidates who are admitted to the programme and who fulfill all the requirements for the award of the Degree.

#### **1. Admission Criteria**

The eligibility criteria for admission into UG Engineering programmes are as per the norms approved by Govt. of Andhra Pradesh from time to time. The sanctioned seats in each programme in the college are classified into CATEGORY-A, and CATEGORY-B at 1<sup>st</sup> year level and only CATEGORY-A at Lateral Entry 2<sup>nd</sup> year level. The percentages of Category-A, Category-B and Lateral Entry Seats are decided from time to time by the Government of Andhra Pradesh.

- CATEGORY – A (70%): These seats are filled through Convener, EAMCET as per the norms approved by the Government of Andhra Pradesh.
- CATEGORY – B (30%): These seats are filled by the College as per the norms approved by the Government of Andhra Pradesh.
- Lateral Entry: Lateral entry candidates shall be admitted into the Third semester directly as per the norms approved by the Convener, ECET, and Government of Andhra Pradesh.

#### **2. Award of B. Tech., Degree**

A student will be declared eligible for the award of B. Tech. degree if he/she fulfills the following:

- i. Pursues a course of study in not less than four and not more than eight academic years.
- ii. After eight academic years from the year of their admission, he/she shall forfeit their seat in B. Tech course and their admission stands cancelled.
- iii. Registers for 160 credits and must secure all the 160 credits.
- iv. A student shall be eligible for the award of **B. Tech degree with Honors or Minor if he/she earns 20 credits in addition to the 160 credits. A student shall be permitted to register either for Honors or for Minor and not for both simultaneously.**

### 3. Courses of Study

The following courses of study are offered at present as specializations for the B. Tech. Courses

S. No	Branch	Intake	Code	
1	Civil Engineering	120	CIV	01
2	Electrical and Electronics Engineering	180	EEE	02
3	Mechanical Engineering	120	MEC	03
4	Electronics and Communication Engineering	180	ECE	04
5	Computer Science and Engineering	240	CSE	05
6	Information Technology	180	IT	12
7	CSE-Artificial Intelligence and Machine Learning	180	CSM	42
8	CSE-IoT & Cyber Security with Blockchain	120	CIC	47
9	CSE-Internet of Things	60	CSO	49
10	Artificial Intelligence and Data Science	60	AID	54
11	Artificial Intelligence and Machine Learning	180	AIM	61

### 4. Structure of the Undergraduate Engineering program (Regular Degree)

Every course of B. Tech. Program shall be placed in one of the nine categories as listed in the table below:

S. No	Category	Break up of Credits
1	Humanities and social science including Management courses	10.5
2	Basic Science courses	21
3	Engineering science courses	24
4	Professional core Courses	51
5	Open Elective Courses	12
6	Professional Elective Courses	15
7	Internship, seminar, project wok	16.5
8	Mandatory courses	Noncredit
9	Skill Oriented Courses	10
<b>Total Credits</b>		<b>160</b>

#### 1. Assigning of Credits

1- Hr. Lecture (L) per week - 1 credit, 1- Hr. Tutorial (T) per week - 1 credit, 1- Hr. Practical (P) per week - 0.5 credits, 2- Hours Practical (Lab)/week - 1 credit

2. There shall be mandatory student induction program for fresher's, with a three-week duration before the commencement of first semester. Physical activity, Creative Arts, Universal Human Values, Literary, Proficiency Modules, Lectures by Eminent People, Visits to local Areas, Familiarization to Dept./Branch & Innovations etc., shall be included in the guidelines issued by AICTE.
3. All undergraduate students shall register for NCC/NSS activities. A student will be required to participate in an activity for two hours in a week during second and third semesters. Grade shall be awarded as Satisfactory or Unsatisfactory in the mark sheet based on participation, attendance, performance, and behavior. If a student gets an unsatisfactory Grade, he/she shall repeat the above activity in the subsequent years, to complete the degree requirements.
4. Courses like Environmental Sciences, Human Values, Ethics, Indian Constitution, Essence of Indian Traditional Knowledge etc., shall be included in the curriculum as non-credit mandatory courses. Environmental Sciences is to be offered compulsorily as mandatory course for all branches. A student must secure 40% of the marks allotted in the internal evaluation for passing the course. No marks or letter grade shall be allotted for all mandatory non-credit courses.
5. Departments may swap some of the courses between first and second semesters to balance the workload.
6. The concerned Board of studies can assign tutorial hours to such courses wherever it is necessary, but without change in the total number of credits already assigned for semester.
7. There shall be 05 Professional Elective courses and 04 Open Elective courses. **All the Professional & Open Elective courses shall be offered for 3 credits**, wherever lab component is involved it shall be (2-0-2) and without lab component it shall be (3-0-0). **If a course comes with a lab component, that component must be cleared separately.** The concerned BOS shall explore the possibility of introducing virtual labs for such courses with lab component.
8. All Open Electives are offered to students of all branches in general. However, a student shall choose an open Elective from the list in such a manner that he/she has not studied the same course in any form during the Programme.
9. A student shall be permitted to pursue up to a maximum of two elective courses under MOOCs during the Programme. Each of the courses must be

of minimum 12 weeks in duration. Attendance will not be monitored for MOOC courses. Student must pursue and acquire a certificate for a MOOC course only from the organizations/agencies approved by the BoS to earn the 3 credits. The Head of the department shall notify the list of such courses at the beginning of the semester.

10. The college shall invite registration forms from the students at the beginning of the semester for offering professional and open elective courses. There shall be a limit on the minimum and maximum number of registrations based on class/section strength.
11. Students shall undergo mandatory summer internships for a minimum of six weeks duration at the end of second and third year of the Programme. There shall also be mandatory full internship in the final semester of the Programme along with the project work.
12. There shall be 05 skill-oriented courses offered during III to VII semesters. Among the five skill courses, four courses shall focus on the basic and advanced skills related to the domain courses and the remaining one shall be a soft skills course.
13. Undergraduate Degree with Honors/Minor shall be issued by the University to the students who fulfill all the academic eligibility requirements for the B. Tech program and Honors/Minor program. The objective is to provide additional learning opportunities to academically motivated students.
14. Assessment: The performance of a student in each semester shall be evaluated subject wise with a maximum of 100 marks for theory as well as for practical subject. A student has to secure not less than 35% of marks in the end semester examination and minimum 40% of marks in the sum total of internal and end semester examination marks to earn the credits allotted to each course. Detailed guidelines for continuous evaluation shall be planned by concerned combined BoS of the Universities.
15. Students shall undergo mandatory summer internships for a minimum of six weeks duration at the end of second and third year of the Programme. There shall also be mandatory full internship in the final semester of the Programme along with the project work.

## 5. Evaluation

For theory subjects the distribution shall be **30** marks for Internal Evaluation and **70** Marks for Semester End Examinations.

### Guidelines for Internal Assessment (Continuous Evaluation)

During the semester there shall be two internal Mid Examinations.

The weightage of internal marks for 30 consists of **Descriptive Test – 15 Marks**, **Assignment Test- 5 Marks** (Open book system with questions of L4 standard on Bloom's scale), **Objective Test -5 Marks** and **Subject Seminar 5 marks**.

- The Descriptive Test is for 90 minutes duration conducted for 30 marks and will be scaled down to 15 Marks. Each Descriptive test question paper shall contain 3 questions, one question from each unit and all questions need to be answered. All the questions should be mapped to all levels of Blooms Taxonomy.
- The Assignment Test conducted for 20 Marks and will be scaled down to 5 Marks. The test is open book system, and the duration of the exam is 60 minutes. The assignment question paper contains 3 questions given by the subject teacher concerned and all questions should be answered. Students can bring a maximum of three printed textbooks related to that subject. (Soft copies of the textbooks will not be allowed.) The assignments must provide broadened exposure to the course. The questions shall include problem solving approach, problem analysis & design, implementation, case studies etc.
- The objective examination is for 20 minutes duration. (Conducted with 20 multiple choice question with a weightage of 1/4 Mark each)
- For the subject seminar 5 marks, each student shall be evaluated based on the presentation on any topic of his/her choice in the subject duly approved by the faculty member concerned.
- Internal Marks shall be calculated with 70% weightage for better of the two Mid Exams and 30% weightage for other.
- For Practical Subjects the distribution shall be **30** marks for Internal Evaluation and **70** Marks for Semester End Examinations.
- For practical subjects there shall be continuous evaluation during the semester for 30marks. The internal 30 marks shall be awarded as follows: day to day work - 10 marks, Record-05 marks and the remaining 15 marks are to be awarded by conducting an internal laboratory test of 3 hours duration.

### **Guidelines for Semester End Examinations**

For Theory subjects the Semester End Examination for **70 Marks** shall be conducted for 3 hours duration. The question paper shall be given in the following pattern:

The question paper contains one question from each unit with internal choice. Each question carries **14 marks** ( $14 \times 5 = 70$ ). Each course shall consist of five units of syllabus. The questions shall be framed in line with the Course Outcomes defined and cognitive levels.

The semester end examination for Practical Subjects shall be conducted for three-hour duration at the end of semester for **50 marks** as follows: Procedure - 10 marks, Experiment/Program execution – 15 Marks, Results-10 Marks and Viva-voice -15 Marks. For laboratory course in English 30 marks for written exam which includes listening comprehension and 20 marks for viva which includes JAM and Group Discussion.

For the subject having design and/or drawing, (such as Engineering Graphics, Engineering Drawing, Machine Drawing, estimation etc.,) the distribution shall be 30 marks for internal evaluation (20 marks for day-to-day work, and 10 marks for internal tests) and 70 marks for end examination. There shall be two internal tests in a Semester and the Marks for 10 can be calculated with 70% weightage for better of the two performances and 30% weightage for other and these are to be added to the marks obtained in day-to-day work.

For Engineering Project for Community services / Mini Project, there shall be continuous evaluation during the semester for 20 marks and semester end evaluation for 30 marks. The distribution of continuous evaluation marks is as follows: Day-to-Day Assessment- 05 Marks and average of two reviews of 15 Marks each.

The distribution of semester end examination marks for Engineering Project for Community services/Mini Project is as follows: Report -10 Marks and Presentation and Viva Voce – 20 Marks.

In the final semester, the student should mandatorily undergo internship and in parallel he/she should work on a project with well-defined objectives. At the end of the semester the candidate shall submit an internship completion certificate and a project report. A student shall also be permitted to submit project report on the work carried out during the internship. The project report shall be evaluated with an external examiner.

The department shall facilitate and monitor the student internship programs. Completion of internships is mandatory, if any student fails to complete

internship, he/she will not be eligible for the award of degree. In such cases, the student shall repeat and complete the internship.

For Major Project, there shall be continuous evaluation during the semester for 50 marks and semester end evaluation for 100 marks

The distribution of continuous evaluation marks is as follows: Day-to-day Assessment- 30 Marks and average of at least two reviews of 20 Marks each.

The Departmental review committee consists of HoD, two senior Faculty and supervisor concerned.

The semester end examination for Major Project work shall be conducted at the end of VIII Semester. It is evaluated by the Committee consisting of an external examiner, Head of the Department, Senior Faculty and Supervisor of the Project.

Laboratory marks and the internal marks awarded by the faculty are final. However, any grievance regarding marks will be addressed by the result committee if necessary. The recommendations of the committee are final and binding.

MOOCS Courses: All students are eligible to register and complete MOOCS courses relevant to their professional electives listed by the respective departments in the curriculum.

However, if any student fails to complete a MOOCS course, or the course is not offered by the agency concerned, that student is eligible to attend the examination following the same syllabus and pattern of examination in the VIII semester.

The MOOCS grades awarded to the student by the agency are converted to the course grades based on the percentage of marks obtained.

The duration for course registered under MOOCS should range between 8 to 12 Weeks.

A student shall be deemed to have satisfied the academic requirements and earned the credits allotted to Industrial Oriented Mini Project/Summer Internship/practical training, if the student secures not less than 40% of marks (i.e., 40 out of 100 allotted marks) in each of them. The student is deemed to have failed, if he/she (i) does not submit a report on Industrial Oriented Mini Project/Summer Internship or does not make a presentation of the same before the evaluation committee as per schedule, or (ii) does not present the seminar as required, or (iii) secures less than 40% of marks in Industrial Oriented Mini Project/Summer Internship and project seminar evaluations.

A student may reappear once for each of the above evaluations, when they are scheduled again; if the student fails in such 'one reappearance' evaluation also,

the student must reappear for the same in the next subsequent semester, as and when it is scheduled.

## **6. Attendance Requirement**

- i. A student shall be eligible to appear for end semester examinations if he/she acquires a minimum of 75% of attendance in aggregate of all the subjects in a semester.
- ii. Shortage of Attendance below 65% in aggregate shall in NO case be condoned.
- iii. Condonation for shortage of attendance in aggregate up to 10% (65% and above and below 75%) in each semester may be granted by the College Academic Committee.
- iv. Students whose shortage of attendance is not condoned in any semester are not eligible to take their end semester examination of that class and their registration shall stand cancelled.
- v. A student will not be promoted to the next semester unless he satisfies the attendance requirements of the present semester, as applicable. They may seek readmission for that semester when offered next.
- vi. A stipulated fee shall be payable towards condonation of shortage of attendance to the college. (a) A student is eligible to write the University examinations if he acquires a minimum of 50% in each subject and 75% of attendance in aggregate of all the subjects.

## **7. Promotion Rules**

- a) A student shall be promoted from first year to second year if he fulfills the minimum attendance requirements.
- b) A student will be promoted from II year to III year if he fulfills the academic requirement of 40% of credits up to either II year I-Semester or II year II-Semester from all the examinations, whether the candidate takes the examinations and secures prescribed minimum attendance in II-year II semester.
- c) A student shall be promoted from III year to IV year if he fulfills the academic requirements of 40% of the credits up to either III year I semester or III-year II semester from all the examinations, whether the candidate takes the examinations and secures prescribed minimum attendance in III-year II semester.

## 8. Grading

The grade points and letter grade will be awarded to each course based on students' performance as per the grading system shown in the following Table.

Range of Marks	Letter Grade	Level	Grade Points
≥ 90	<b>A+</b>	Outstanding	10
80 to 89	<b>A</b>	Excellent	9
70 to 79	<b>B</b>	Very Good	8
60 to 69	<b>C</b>	Good	7
50 to 59	<b>D</b>	Fair	6
40 to 49	<b>E</b>	Satisfactory	5
<40	<b>F</b>	Fail	0
ABSENT	<b>Ab</b>	Absent	0

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

- i. The Semester Grade Point Average (SGPA) is the ratio of sum of the product of the number of credits with the grade points scored by a student in all the courses taken by a student and the sum of the number of credits of all the courses undergone by a student, i.e.

$$SGPA = \frac{\sum (C_i \times G_i)}{\sum C_i}$$

where,  $C_i$  is the number of credits of the  $i^{\text{th}}$  subject and  $G_i$  is the grade point scored by the student in the  $i^{\text{th}}$  course

- ii. The Cumulative Grade Point Average (CGPA) will be computed in the same manner considering all the courses undergone by a student over all the semesters of a program,

$$\text{i.e., } CGPA = \frac{\sum (C_i \times S_i)}{\sum C_i}$$

where 'S<sub>i</sub>' is the SGPA of the  $i^{\text{th}}$  semester and  $C_i$  is the total number of credits in that semester

- iii. Both SGPA and CGPA shall be rounded off to 2 decimal points and reported in the transcripts.
- iv. While computing the SGPA/CGPA, the subjects in which the student is awarded Zero grade points will also be included.
- v. Grade Point: It is a numerical weight allotted to each letter grade on a 10-point scale.
- vi. Letter Grade: It is an index of the performance of students in a said course. Grades are denoted by letters A+, A, B, C, D, E and F.

vii. As per AICTE regulations, conversion of CGPA into equivalent percentage as follows:

$$\text{Equivalent Percentage} = (\text{CGPA} - 0.50) \times 10$$

### 9. Award of Class

After a student has satisfied the requirements prescribed for the completion of the program and is eligible for the award of B. Tech. degree, he/she shall be placed in one of the following:

Class Awarded	CGPA to be secured
First Class with distinction*	$\geq 7.5$
First Class	$\geq 6.5 \ \& \ < 7.5$
Second Class	$\geq 5.5 \ \& \ < 6.5$
Pass Class	$\geq 4 \ \& \ < 5.5$
Fail	$< 4$

\* Awarded only if all the credit courses prescribed are cleared within four years for regular candidates and three years for lateral entry candidates

\* The students who are approved for break in study for entrepreneurs/start-ups will also be considered for award of first class with distinction

For the purpose of awarding First, Second and Pass Class, CGPA obtained in the examinations appeared within the maximum period allowed for the completion of the program shall be considered

### 10. Gap - Year

Gap Year – concept of Student Entrepreneur in Residence shall be introduced and outstanding students who wish to pursue entrepreneurship are allowed to take a break of one year at any time after I year/II year/III year to pursue entrepreneurship full time. This period shall be counted for the maximum time for graduation. An evaluation committee at university level shall be constituted to evaluate the proposal submitted by the student and the committee shall decide on permitting the student for availing the Gap Year.

### 11. Curricular Framework for Mandatory Internships

1. Two summer internships each with a minimum of six weeks duration, done at the end of second and third years, respectively are mandatory. The internship can be done by the students at local industries, Govt.

Organizations, construction agencies, Industries, Hydel and thermal power projects and also in software MNCs.

2. Evaluation of the summer internships shall be through the departmental committee. A student will be required to submit a summer internship report to the concerned department and appear for an oral presentation before the departmental committee. The report and the oral presentation shall carry 40% and 60% weightages respectively.
3. In the final semester, the student should mandatorily undergo internship and in parallel he/she should work on a project with well-defined objectives. At the end of the semester the candidate shall submit an internship completion certificate and a project report. A student shall also be permitted to submit project report on the work carried out during the internship. The project report shall be evaluated with an external examiner.
4. The College shall facilitate and monitor the student internship programs. Completion of internships is mandatory, if any student fails to complete internship, he/she will not be eligible for the award of degree. In such cases, the student shall repeat and complete the internship.

## **12. Curricular Framework for Skill oriented**

1. For skill oriented/skill advanced course, one theory and 2 practical hours or two theory hours may be allotted as per the decision of concerned BOS.
2. Out of the five skill courses two shall be skill-oriented courses from the same domain and shall be completed in second year. Of the remaining 3 skill courses, one shall be necessarily be a soft skill course and the remaining 2 shall be skill-advanced courses either from the same domain or Job oriented skill courses, which can be of inter disciplinary nature. (See Annexure 1 for model skill courses)
3. A pool of interdisciplinary job-oriented skill courses shall be designed by a common Board of studies by the participating departments/disciplines and the syllabus along with the pre requisites shall be prepared for each of the laboratory infrastructure requirements. The list of such courses shall be included in the curriculum structure of each branch of Engineering, so as to enable the student to choose from the list.
4. The student shall be given an option to choose either the skill courses being offered by the college or to choose a certificate course being offered by industries/Professional bodies/APSSDC or any other accredited bodies as approved by the concerned BoS.

5. The Board of studies of the concerned discipline of Engineering shall review the skill advanced courses being offered by eligible external agencies and prepare a fresh list every year incorporating latest courses based on industrial demand.
6. If a student chooses to take a Certificate Course offered by Industries/Professional bodies/APSSDC or any other accredited bodies, in lieu of the skill advanced course offered by the Department, the credits shall be awarded to the student upon producing the Course Completion Certificate from the agency/professional bodies as approved by the Board of studies.
7. If a student prefers to take a certificate course offered by external agency, the department shall mark attendance of the student for the remaining courses in that semester excluding the skill course in all the calculations of mandatory attendance requirements upon producing a valid certificate as approved by the concerned Board of Studies, the student is deemed to have fulfilled the attendance requirement of the course and acquire the credits assigned to the course.
8. A committee shall be formed at the level of the college to evaluate the grades/marks given for a course by external agencies and convert to the equivalent marks/grades. The recommended conversions and appropriate grades/marks are to be approved by the University/Academic Council.

### **13. Curricular Framework for Honors Programme**

1. Students of a Department/Discipline are eligible to opt for Honors Programme offered by the same Department/Discipline.
2. A student shall be permitted to register for Honors program at the beginning of 4th semester provided that the student must have acquired a minimum of 8.0 SGPA up to the end of 2<sup>nd</sup> semester without any backlogs. In case of the declaration of the 3<sup>rd</sup> semester results after the commencement of the 4<sup>th</sup> semester and if a student fails to score the required minimum of 8 SGPA, his/her registration for Honors Programme stands cancelled and he/she shall continue with the regular Programme.
3. Students can select the additional and advanced courses from their respective branch in which they are pursuing the degree and get an honors degree in the same. e.g. If a Mechanical Engineering student completes the selected advanced courses from same branch under this scheme, he/she will be awarded B.Tech. (Honors) in Mechanical Engineering.

4. In addition to fulfilling all the requisites of a Regular B.Tech Programme, a student shall earn 20 additional credits to be eligible for the award of B. Tech (Honors) degree. This is in addition to the credits essential for obtaining the Under Graduate Degree in Major Discipline (i.e. 160 credits).
5. Of the 20 additional Credits to be acquired, 16 credits shall be earned by undergoing specified courses listed as pools, with four courses, each carrying 4 credits. The remaining 4 credits must be acquired through two MOOCs, which shall be domain specific, each with 2 credits and with a minimum duration of 8/12weeks as recommended by the Board of studies.
6. It is the responsibility of the student to acquire/complete prerequisite before taking the respective course. The courses offered in each pool shall be domain specific courses and advanced courses.
7. The concerned BoS shall decide on the minimum enrolments for offering Honors program by the department. If minimum enrolments criteria are not met then the students shall be permitted to register for the equivalent MOOC courses as approved by the concerned Head of the department in consultation with BoS.
8. Each pool can have theory as well as laboratory courses. If a course comes with a lab component, that component has to be cleared separately. The concerned BoS shall explore the possibility of introducing virtual labs for such courses with lab component.
9. MOOC courses must be of minimum 8 weeks in duration. Attendance will not be monitored for MOOC courses. Students have to acquire a certificate from the agencies approved by the BOS with grading or marks or pass/fail in order to earn 4 credits. If the MOOC course is a pass/fail course without any grades, the grade to be assigned will be as decided by the university/academic council.
10. The concerned BoS shall also consider courses listed under professional electives of the respective B. Tech programs for the requirements of B. Tech (Honors). However, a student shall be permitted to choose only those courses that he/she has not studied in any form during the Programme.
11. If a student drops or is terminated from the Honors program, the additional credits so far earned cannot be converted into free or core electives; they will remain extra. These additional courses will find mention in the transcript (but not in the degree certificate). In such

cases, the student may choose between the actual grade or a “pass (P)” grade and also choose to omit the mention of the course as for the following: All the courses done under the dropped Minors will be shown in the transcript. None of the courses done under the dropped Minor will be shown in the transcript.

12. In case a student fails to meet the CGPA requirement for Degree with Honors at any point after registration, he/she will be dropped from the list of students eligible for Degree with Honors and they will receive regular B.Tech degree only. However, such students will receive a separate grade sheet mentioning the additional courses completed by them.
13. Honors must be completed simultaneously with a major degree program. A student cannot earn Honors after he/she has already earned bachelor’s degree.

#### **14. Curricular Framework for Minor Programme**

1. Students who are desirous of pursuing their special interest areas other than the chosen discipline of Engineering may opt for additional courses in minor specialization groups offered by a department other than their parent department. For example, If Mechanical Engineering student selects subjects from Civil Engineering under this scheme, he/she will get Major degree of Mechanical Engineering with minor degree of Civil Engineering  
Student can also opt for Industry relevant tracks of any branch to obtain the Minor Degree, for example, a B.Tech Mechanical student can opt for the industry relevant tracks like Data Mining track, IOT track, Machine learning track etc.
2. The BOS concerned shall identify as many tracks as possible in the areas of emerging technologies and industrial relevance / demand. For example, the minor tracks can be the fundamental courses in CSE, ECE, EEE,CE,ME etc or industry tracks such as Artificial Intelligence (AI), Machine Learning (ML), Data Science(DS), Robotics, Electric vehicles, Robotics, VLSI etc.
3. The list of disciplines/branches eligible to opt for a particular industry relevant minor specialization shall be clearly mentioned by the respective BoS.
4. There shall be no limit on the number of programs offered under Minor. The college can offer minor programs in emerging technologies based on expertise in the respective departments or can explore the possibility of

collaborating with the relevant industries/agencies in offering the program.

5. The concerned BoS shall decide on the minimum enrolments for offering Minor program by the department. If a minimum enrolments criterion is not met, then the students may be permitted to register for the equivalent MOOC courses as approved by the concerned Head of the department in consultation with BoS.
6. A student shall be permitted to register for Minors program at the beginning of 4th semester subject to a maximum of two additional courses per semester, provided that the student must have acquired 8 SGPA (Semester Grade point average) up to the end of 2<sup>nd</sup> semester without any history of backlogs. It is expected that the 3<sup>rd</sup> semester results may be announced after the commencement of the 4<sup>th</sup> semester. If a student fails to acquire 8 SGPA upto 3<sup>rd</sup> semester or failed in any of the courses, his registration for Minors program shall stand cancelled. An SGPA of 8 must be maintained in the subsequent semesters without any backlog in order to keep the Minors registration active.
7. A student shall earn additional 20 credits in the specified area to be eligible for award of B. Tech degree with Minor. This is in addition to the credits essential for obtaining the Undergraduate Degree in Major Discipline (i.e., 160 credits).
8. Out of the 20 Credits, 16 credits shall be earned by undergoing specified courses listed by the concerned BoS along with prerequisites. It is the responsibility of the student to acquire/complete prerequisite before taking the respective course. If a course comes with a lab component, that component must be cleared separately. A student shall be permitted to choose only those courses that he/she has not studied in any form during the Programme.
9. In addition to the 16 credits, students must pursue at least 2 courses through MOOCs. The courses must be of minimum 8 weeks in duration. Attendance will not be monitored for MOOC courses. Student has to acquire a certificate from the agencies approved by the BOS with grading or marks or pass/fail in order to earn 4 credits. If the MOOC course is a pass/fail course without any grades, the grade to be assigned as decided by the University/academic council.
10. Student can opt for the industry relevant minor specialization as approved by the concerned departmental BoS. Student can opt the courses from Skill Development Corporation (APSSDC) or can opt the

courses from an external agency recommended and approved by concerned BOS and should produce course completion certificate.

The Board of studies of the concerned discipline of Engineering shall review such courses being offered by eligible external agencies and prepare a fresh list every year incorporating latest skills based on industrial demand.

11. A committee should be formed at the level of College/Universities/department to evaluate the grades/marks given by external agencies to a student which are approved by concerned BoS. Upon completion of courses the departmental committee should convert the obtained grades/marks to the maximum marks assigned to that course. The controller of examinations can take a decision on such conversions and may give appropriate grades.
12. If a student drops (or terminated) from the Minor program, they cannot convert the earned credits into free or core electives; they will remain extra. These additional courses will find mention in the transcript (but not in the degree certificate). In such cases, the student may choose between the actual grade or a “pass (P)” grade and also choose to omit the mention of the course as for the following:  
All the courses done under the dropped Minors will be shown in the transcript. None of the courses done under the dropped Minor will be shown in the transcript.
13. In case a student fails to meet the CGPA requirement for B. Tech degree with Minor at any point after registration, he/she will be dropped from the list of students eligible for degree with Minors and they will receive B. Tech degree only.  
However, such students will receive a separate grade sheet mentioning the additional courses completed by them.
14. Minor must be completed simultaneously with a major degree program. A student cannot earn the Minor after he/she has already earned bachelor’s degree.

#### **15. Industrial Collaborations (Case Study)**

University-Industry linkages refer to the interaction between firms and universities or public research centers with the goal of solving technical problems, working on R&D, innovation projects and gathering scientific as well as technological knowledge. It involves the collaboration of Industries and Universities in various areas that would foster the research ecosystem in the country and enhance growth of economy, industry and society at large.

The Universities/Institutions (Autonomous) are permitted to design any number of Industry oriented minor tracks as the respective BoS feels necessary. In this process the Universities/Institutions can plan to have industrial collaborations in designing the minor tracks and to develop the content and certificate programs. Industry giants such as IBM, TCS, WIPRO etc., may be contacted to develop such collaborations. The Universities/Institutions shall also explore the possibilities of collaborations with major Industries in the core sectors and professional bodies to create specialized domain skills.

#### **16. Course Pattern**

- The entire course of study is for four academic years, all the years are on semester pattern and the medium of instruction is English.
- A student who eligible to appear for the end semester examination in a subject but absent from it or has failed in the end semester examination, may write the exam in that subject when conducted next.
- When a student is detained for lack of credits/shortage of attendance, he may be readmitted into the same semester in which he has been detained. However, the academic regulations under which he was first admitted shall continue to be applicable to him.

#### **17. Minimum Days of Instructions**

Each semester consists of a minimum of 90 instruction days excluding examination days.

#### **18. Transfer of Branch**

There shall be no branch transfer after the completion of the first-year admission process.

#### **19. Withholding of results**

If the student has not paid any dues to the college or if any case of indiscipline is pending against him/her, the result of the student will be with-held. His/her degree will be with-held in such cases.

#### **20. Transitory Regulations**

A candidate, who is detained or discontinued a semester, on re-admission shall be required to pass all the courses in the curriculum prescribed for such batch of students in which the student joins subsequently and the academic regulations be applicable to him/her which are in force at the time of his/her admission. However, exemption will be given to those candidates who have already passed in such courses in the earlier

semester(s) and additional courses are to be studied as approved by Board of Studies and ratified by Academic Council.

## **21. Amendments to Regulations**

### **Revisions of Regulations, Curriculum and Syllabi**

The college may from time-to-time revise, amend or change the Regulations, Curriculum, Syllabus and Scheme of examinations through the Board of Studies with the approval of Academic Council and Governing Body of the college.

## **22. Transferred Students**

The students seeking transfer to VVIT from various Universities/ Institutions have to obtain the credits of any equivalent subjects as prescribed by the Academic Council. Only the internal marks obtained in the previous institution will be considered for evaluation of failed subjects.

### **ACADEMIC REGULATIONS (R20) FOR B. TECH. LATERAL ENTRY SCHEME**

Applicable for the students admitted into II-year B. Tech. from the Academic Year 2020-21 onwards

#### **1. Award of B. Tech. Degree**

A student will be declared eligible for the award of B. Tech. Degree if he fulfills the following academic regulations:

- A student shall be declared eligible for the award of the B. Tech Degree, if he pursues a course of study in not less than three academic years and not more than six academic years.
- The candidate shall register for 121 credits and secure all the 121 credits. A student shall be eligible for the award of B.Tech degree with Honors or Minor if he/she earns 20 credits in addition to the 121 credits. A student shall be permitted to register either for Honors or for Minor and not for both simultaneously.

The attendance regulations of B. Tech. (Regular) shall be applicable to B.Tech Lateral Entry Students.

#### **2. Promotion Rule**

- A student shall be promoted from second year to third year if he fulfills the minimum attendance requirement.
- A student shall be promoted from III year to IV year if he fulfills the academic requirements of 40% of the credits up to III-year II semester from all the examinations, whether or not the candidate takes the examinations and secures prescribed minimum attendance in III year II semester.

### 3. Award of Class

After a student has satisfied the requirement prescribed for the completion of the program and is eligible for the award of B. Tech. Degree, he shall be placed in one of the following four classes:

<b>Class Awarded</b>	<b>CGPA to be secured</b>
First Class with distinction*	$\geq 7.5$
First Class	$\geq 6.5$ & $< 7.5$
Second Class	$\geq 5.5$ & $< 6.5$
Pass Class	$\geq 4$ & $< 5.5$
Fail	$< 4$

All the other regulations as applicable to B. Tech. 4-year degree course (Regular) will hold good for B. Tech Lateral Entry Scheme.

**MALPRACTICE RULES****DISCIPLINARY ACTION FOR IMPROPER CONDUCT IN EXAMINATIONS**

<b>S. No</b>	<b>Nature of Malpractices/ Improper conduct</b>	<b>Punishment</b>
1. (a)	Possesses or keeps accessible in examination hall, any paper, notebook, programmable calculators, Cell phones, pager, palm computers or any other form of material concerned with or related to the subject of the examination (theory or practical) in which he is appearing but has not made use of (material shall include any marks on the body of the candidate which can be used as an aid in the subject of the examination)	Expulsion from the examination hall and cancellation of the performance in that subject only.
(b)	Gives assistance or guidance or receives it from any other candidate orally or by any other body language methods or communicates through cell phones with any candidate or persons in or outside the exam hall in respect of any matter.	Expulsion from the examination hall and cancellation of the performance in that subject only of all the candidates involved. In case of an outsider, he will be handed over to the police and a case is registered against him.
2.	Has copied in the examination hall from any paper, book, programmable calculators, palm computers or any other form of material relevant to the subject of the examination (theory or practical) in which the candidate is appearing.	Expulsion from the examination hall and cancellation of the performance in that subject and all other subjects the candidate has already appeared including practical examinations and project work and shall not be permitted to appear for the remaining examinations of the subjects of that Semester/year. The Hall Ticket of the candidate is to be cancelled and sent to the University.
3.	Impersonates any other candidate in connection with the examination.	The candidate who has impersonated shall be expelled from examination hall. The candidate is also debarred and

		forfeits the seat. The performance of the original candidate who has been impersonated, shall be cancelled in all the subjects of the examination (including practical and project work) already appeared and shall not be allowed to appear for examinations of the remaining subjects of that semester/year. The candidate is also debarred for two consecutive semesters from class work and all University examinations. The continuation of the course by the candidate is subject to the academic regulations in connection with forfeiture of seat. If the imposter is an outsider, he will be handed over to the police and a case is registered against him.
4.	Smuggles in the Answer book or additional sheet or takes out or arranges to send out the question paper during the examination or answer book or additional sheet, during or after the examination.	Expulsion from the examination hall and cancellation of performance in that subject and all the other subjects the candidate has already appeared including practical examinations and project work and shall not be permitted for the remaining examinations of the subjects of that semester/year. The candidate is also debarred for two consecutive semesters from class work and all University examinations. The continuation of the course by the candidate is subject to the academic regulations in connection with forfeiture of seat.
5.	Uses objectionable, abusive or offensive language in the answer paper or in letters to the	Cancellation of the performance in that subject.

	examiners or writes to the examiner requesting him to award pass marks.	
6.	Refuses to obey the orders of the Chief Superintendent/Assistant – Superintendent / any officer on duty or misbehaves or creates disturbance of any kind in and around the examination hall or organizes a walk out or instigates others to walk out, or threatens the officer-in charge or any person on duty in or outside the examination hall of any injury to his person or to any of his relations whether by words, either spoken or written or by signs or by visible representation, assaults the officer-in-charge, or any person on duty in or outside the examination hall or any of his relations, or indulges in any other act of misconduct or mischief which result in damage to or destruction of property in the examination hall or any part of the College campus or engages in any other act which in the opinion of the officer on duty amounts to use of unfair means or misconduct or has the tendency to disrupt the orderly conduct of the examination.	In case of students of the college, they shall be expelled from examination halls and cancellation of their performance in that subject and all other subjects the candidate(s) has (have) already appeared and shall not be permitted to appear for the remaining examinations of the subjects of that semester/year. The candidates also are debarred and forfeit their seats. In case of outsiders, they will be handed over to the police and a police case is registered against them.
7.	Leaves the exam hall taking away answer script or intentionally tears of the script or any part thereof inside or outside the examination hall.	Expulsion from the examination hall and cancellation of performance in that subject and all the other subjects the candidate has already appeared including practical examinations and project work and shall not be permitted for the remaining examinations of the subjects of that semester/year. The candidate is also debarred for two consecutive semesters from

		class work and all University examinations. The continuation of the course by the candidate is subject to the academic regulations in connection with forfeiture of seat.
8.	Possess any lethal weapon or firearm in the examination hall.	Expulsion from the examination hall and cancellation of the performance in that subject and all other subjects the candidate has already appeared including practical examinations and project work and shall not be permitted for the remaining examinations of the subjects of that semester/year. The candidate is also debarred and forfeits the seat.
9.	If student of the college, who is not a candidate for the particular examination or any person not connected with the college indulges in any malpractice or improper conduct mentioned in clause 6 to 8.	Student of the colleges expulsion from the examination hall and cancellation of the performance in that subject and all other subjects the candidate has already appeared including practical examinations and project work and shall not be permitted for the remaining examinations of the subjects of that semester/year. The candidate is also debarred and forfeits the seat. Person(s) who do not belong to the College will be handed over to police and, a police case will be registered against them.
10.	Comes in a drunken condition to the examination hall.	Expulsion from the examination hall and cancellation of the performance in that subject and all other subjects the candidate has already appeared including practical examinations and project work and shall not be

		permitted for the remaining examinations of the subjects of that semester/year.
11.	Copying detected on the basis of internal evidence, such as, during valuation or during special scrutiny.	Cancellation of the performance in that subject and all other subjects the candidate has appeared including practical examinations and project work of that semester/year examinations.
12.	If any malpractice is detected which is not covered in the above clauses 1 to 11 shall be reported to the University for further action to award suitable punishment.	

## COURSE STRUCTURE

### CIVIL ENGINEERING (CIV)

I Year I Semester						
S. No.	Code	Course Name	L	T	P	C
		Communicative English	3	1	0	3
1		Mathematics-I	3	1	0	3
2		Engineering Physics	3	1	0	3
3		Problem Solving using C	3	1	0	3
4		Engineering Graphics	1	1	4	3
5		Communicative English Lab	0	0	3	1.5
6		Engineering Physics & Virtual Lab	0	0	3	1.5
7		Problem Solving using C Lab	0	0	3	1.5
8		Communicative English	0	0	3	1.5
<b>Total Credits</b>			<b>19.5</b>			

I Year II Semester						
S. No.	Code	Course Name	L	T	P	C
1		Mathematics-II	3	1	0	3
2		Basic Electricals and Electronics Engineering	3	1	0	3
3		Engineering Chemistry	3	1	0	3
4		Building Materials & Construction	3	1	0	3
5		Engineering Mechanics	3	1	0	3
6		Civil Workshop Practice Lab	0	0	3	1.5
7		Engineering Chemistry Lab	0	0	3	1.5
8		Basic Electricals and Electronics Engineering Lab	0	0	3	1.5
9		Indian Constitution	2	0	0	0
<b>Total Credits</b>			<b>19.5</b>			

## ELECTRICAL AND ELECTRONICS ENGINEERING (EEE)

I Year I Semester						
S. No.	Code	Course Name	L	T	P	C
1		Communicative English	3	1	0	3
2		Mathematics-I	3	1	0	3
3		Engineering Physics	3	1	0	3
4		Problem Solving using C	3	1	0	3
5		Engineering Graphics	1	1	4	3
6		Communicative English Lab	0	0	3	1.5
7		Engineering Physics & Virtual Lab	0	0	3	1.5
8		Problem Solving using C Lab	0	0	3	1.5
<b>Total Credits</b>			<b>19.5</b>			

I Year II Semester						
S. No.	Code	Course Name	L	T	P	C
1		Mathematics-II	3	1	0	3
2		Basic Electronic Devices and Circuits	3	1	0	3
3		Applied Chemistry	3	1	0	3
4		Basic Circuit Analysis	3	1	0	3
5		Problem Solving using Python	3	1	0	3
6		Problem Solving using Python Lab	0	0	3	1.5
7		Applied Chemistry Lab	0	0	3	1.5
8		Basic Electronic Devices and Circuits Lab	0	0	3	1.5
9		Indian Constitution	2	0	0	0
<b>Total Credits</b>			<b>19.5</b>			

## MECHANICAL ENGINEERING (MEC)

I Year I Semester						
S. No.	Code	Course Name	L	T	P	C
1		Communicative English	3	1	0	3
2		Mathematics-I	3	1	0	3
3		Engineering Physics	3	1	0	3
4		Problem Solving using C	3	1	0	3
5		Engineering Graphics	1	1	4	3
6		Communicative English Lab	0	0	3	1.5
7		Engineering Physics & Virtual Lab	0	0	3	1.5
8		Problem Solving using C Lab	0	0	3	1.5
<b>Total Credits</b>			<b>19.5</b>			

I Year II Semester						
S. No.	Code	Course Name	L	T	P	C
1		Mathematics-II	3	1	0	3
2		Basic Electricals and Electronics Engineering	3	1	0	3
3		Engineering Chemistry	3	1	0	3
4		Materials Science	3	1	0	3
5		Engineering Mechanics	3	1	0	3
6		Workshop Practice Lab	0	0	3	1.5
7		Engineering Chemistry Lab	0	0	3	1.5
8		Basic Electricals and Electronics Engineering Lab	0	0	3	1.5
9		Indian Constitution	2	0	0	0
<b>Total Credits</b>			<b>19.5</b>			

## ELECTRONICS AND COMMUNICATION ENGINEERING (ECE)

I Year I Semester						
S. No.	Code	Course Name	L	T	P	C
1		Communicative English	3	1	0	3
2		Mathematics-I	3	1	0	3
3		Engineering Physics	3	1	0	3
4		Problem Solving using C	3	1	0	3
5		Engineering Graphics	1	1	4	3
6		Communicative English Lab	0	0	3	1.5
7		Engineering Physics & Virtual Lab	0	0	3	1.5
8		Problem Solving using C Lab	0	0	3	1.5
<b>Total Credits</b>			<b>19.5</b>			

I Year II Semester						
S. No.	Code	Course Name	L	T	P	C
1		Mathematics-II	3	1	0	3
2		Basic Electrical Engineering	3	1	0	3
3		Applied Chemistry	3	1	0	3
4		Network Analysis	3	1	0	3
5		Problem Solving using Python	3	1	0	3
6		Problem Solving using Python Lab	0	0	3	1.5
7		Applied Chemistry Lab	0	0	3	1.5
8		Basic Electrical Engineering Lab	0	0	3	1.5
9		Indian Constitution	2	0	0	0
<b>Total Credits</b>			<b>19.5</b>			

## INFORMATION TECHNOLOGY (INF)

### I Year I Semester

S. No.	Code	Course Name	L	T	P	C
1		Mathematics-I	3	1	0	3
2		Applied Physics	3	1	0	3
3		Communicative English	3	1	0	3
4		Problem Solving using C	3	1	0	3
5		Computer Engineering Workshop	1	0	4	1.5
6		Applied Physics Lab & Virtual Lab	0	0	3	1.5
7		Communicative English Lab	0	0	3	1.5
8		Problem Solving using C Lab	0	0	3	1.5
<b>Total Credits</b>			<b>19.5</b>			

### I Year II Semester

S. No	Code	Course Name	L	T	P	C
1		Basic Electricals and Electronics Engineering	3	1	0	3
2		Mathematics-II	3	1	0	3
3		Applied Chemistry	3	1	0	3
4		Problem Solving using Python	3	1	0	3
5		Digital Logic Design	3	1	0	3
6		Basic Electricals and Electronics Engineering Lab	1	0	3	1.5
7		Applied Chemistry Lab	0	0	3	1.5
8		Problem Solving using Python Lab	0	0	3	1.5
9		Environmental Studies	0	0	3	1.5
<b>Total Credits</b>			<b>19.5</b>			

## COMPUTER SCIENCE AND ENGINEERING (CSE)

### I Year I Semester

S. No.	Code	Course Name	L	T	P	C
1		Mathematics-I	3	1	0	3
2		Applied Chemistry	3	1	0	3
3		Basic Electricals and Electronics Engineering	3	1	0	3
4		Problem Solving using C	3	1	0	3
5		Computer Engineering Workshop	1	0	4	1.5
6		Applied Chemistry Lab	0	0	3	1.5
7		Basic Electricals and Electronics Engineering Lab	0	0	3	1.5
8		Problem Solving using C Lab	0	0	3	1.5
<b>Total Credits</b>			<b>19.5</b>			

### I Year II Semester

S. No	Code	Course Name	L	T	P	C
1		Communicative English	3	1	0	3
2		Mathematics-II	3	1	0	3
3		Applied Physics	3	1	0	3
4		Problem Solving using Python	3	1	0	3
5		Digital Logic Design	3	1	0	3
6		Communicative English Lab	1	0	3	1.5
7		Applied Physics Lab & Virtual Lab	0	0	3	1.5
8		Problem Solving using Python Lab	0	0	3	1.5
9		Environmental Studies	0	0	3	1.5
<b>Total Credits</b>			<b>19.5</b>			

**COMPUTER SCIENCE AND ENGINEERING Artificial Intelligence & Machine Learning (CSM)**

**I Year I Semester**

S. No.	Code	Course Name	L	T	P	C
1		Mathematics-I	3	1	0	3
2		Applied Chemistry	3	1	0	3
3		Basic Electricals and Electronics Engineering	3	1	0	3
4		Problem Solving using C	3	1	0	3
5		Computer Engineering Workshop	1	0	4	1.5
6		Applied Chemistry Lab	0	0	3	1.5
7		Basic Electricals and Electronics Engineering Lab	0	0	3	1.5
8		Problem Solving using C Lab	0	0	3	1.5
<b>Total Credits</b>			<b>19.5</b>			

**I Year II Semester**

S. No	Code	Course Name	L	T	P	C
1		Communicative English	3	1	0	3
2		Mathematics-II	3	1	0	3
3		Applied Physics	3	1	0	3
4		Problem Solving using Python	3	1	0	3
5		Digital Logic Design	3	1	0	3
6		Communicative English Lab	1	0	3	1.5
7		Applied Physics Lab & Virtual Lab	0	0	3	1.5
8		Problem Solving using Python Lab	0	0	3	1.5
9		Environmental Studies	0	0	3	1.5
<b>Total Credits</b>			<b>19.5</b>			

**COMPUTER SCIENCE AND ENGINEERING Internet of Things (CSO)****I Year I Semester**

S. No.	Code	Course Name	L	T	P	C
1		Mathematics-I	3	1	0	3
2		Applied Chemistry	3	1	0	3
3		Basic Electricals and Electronics Engineering	3	1	0	3
4		Problem Solving using C	3	1	0	3
5		Computer Engineering Workshop	1	0	4	1.5
6		Applied Chemistry Lab	0	0	3	1.5
7		Basic Electricals and Electronics Engineering Lab	0	0	3	1.5
8		Problem Solving using C Lab	0	0	3	1.5
<b>Total Credits</b>			<b>19.5</b>			

**I Year II Semester**

S. No	Code	Course Name	L	T	P	C
1		Communicative English	3	1	0	3
2		Mathematics-II	3	1	0	3
3		Applied Physics	3	1	0	3
4		Problem Solving using Python	3	1	0	3
5		Digital Logic Design	3	1	0	3
6		Communicative English Lab	1	0	3	1.5
7		Applied Physics Lab & Virtual Lab	0	0	3	1.5
8		Problem Solving using Python Lab	0	0	3	1.5
9		Environmental Studies	0	0	3	1.5
<b>Total Credits</b>			<b>19.5</b>			

**COMPUTER SCIENCE AND ENGINEERING IoT and Cyber Security with  
Blockchain Technologies (CIC)**

**I Year I Semester**

S. No.	Code	Course Name	L	T	P	C
1		Mathematics-I	3	1	0	3
2		Applied Chemistry	3	1	0	3
3		Basic Electricals and Electronics Engineering	3	1	0	3
4		Problem Solving using C	3	1	0	3
5		Computer Engineering Workshop	1	0	4	1.5
6		Applied Chemistry Lab	0	0	3	1.5
7		Basic Electricals and Electronics Engineering Lab	0	0	3	1.5
8		Problem Solving using C Lab	0	0	3	1.5
<b>Total Credits</b>			<b>19.5</b>			

**I Year II Semester**

S. No	Code	Course Name	L	T	P	C
1		Communicative English	3	1	0	3
2		Mathematics-II	3	1	0	3
3		Applied Physics	3	1	0	3
4		Problem Solving using Python	3	1	0	3
5		Digital Logic Design	3	1	0	3
6		Communicative English Lab	1	0	3	1.5
7		Applied Physics Lab & Virtual Lab	0	0	3	1.5
8		Problem Solving using Python Lab	0	0	3	1.5
9		Environmental Studies	0	0	3	1.5
<b>Total Credits</b>			<b>19.5</b>			

**ARTIFICIAL INTELLIGENCE & DATA SCIENCE (AID)****I Year I Semester**

S. No.	Code	Course Name	L	T	P	C
1		Mathematics-I	3	1	0	3
2		Applied Chemistry	3	1	0	3
3		Basic Electricals and Electronics Engineering	3	1	0	3
4		Problem Solving using C	3	1	0	3
5		Computer Engineering Workshop	1	0	4	1.5
6		Applied Chemistry Lab	0	0	3	1.5
7		Basic Electricals and Electronics Engineering Lab	0	0	3	1.5
8		Problem Solving using C Lab	0	0	3	1.5
<b>Total Credits</b>			<b>19.5</b>			

**I Year II Semester**

S. No	Code	Course Name	L	T	P	C
1		Communicative English	3	1	0	3
2		Mathematics-II	3	1	0	3
3		Applied Physics	3	1	0	3
4		Problem Solving using Python	3	1	0	3
5		Digital Logic Design	3	1	0	3
6		Communicative English Lab	1	0	3	1.5
7		Applied Physics Lab & Virtual Lab	0	0	3	1.5
8		Problem Solving using Python Lab	0	0	3	1.5
9		Environmental Studies	0	0	3	1.5
<b>Total Credits</b>			<b>19.5</b>			

## ARTIFICIAL INTELLIGENCE & MACHINE LEARNING (AIM)

I Year I Semester						
S. No.	Code	Course Name	L	T	P	C
1		Mathematics-I	3	1	0	3
2		Applied Chemistry	3	1	0	3
3		Basic Electricals and Electronics Engineering	3	1	0	3
4		Problem Solving using C	3	1	0	3
5		Computer Engineering Workshop	1	0	4	1.5
6		Applied Chemistry Lab	0	0	3	1.5
7		Basic Electricals and Electronics Engineering Lab	0	0	3	1.5
8		Problem Solving using C Lab	0	0	3	1.5
<b>Total Credits</b>			<b>19.5</b>			

I Year II Semester						
S. No	Code	Course Name	L	T	P	C
1		Communicative English	3	1	0	3
2		Mathematics-II	3	1	0	3
3		Applied Physics	3	1	0	3
4		Problem Solving using Python	3	1	0	3
5		Digital Logic Design	3	1	0	3
6		Communicative English Lab	1	0	3	1.5
7		Applied Physics Lab & Virtual Lab	0	0	3	1.5
8		Problem Solving using Python Lab	0	0	3	1.5
9		Environmental Studies	0	0	3	1.5
<b>Total Credits</b>			<b>19.5</b>			

**LECTURE PLANS**  
**Humanities and Social Sciences Courses**  
**COMMUNICATIVE ENGLISH**

S. No	Topic	No. of Lectures
<b>Unit-I A Proposal to Girdle the Earth (Excerpt) by Nellie Bly</b> <b>Theme: Exploration (9 hrs)</b>		
1	Introduction	1
2	Reading Comprehension: Skimming for main ideas; scanning for specific pieces of information.	1
3	Writing: Paragraphs, beginnings, introducing the topic, key words, main idea	1
4	Grammar and Vocabulary: Content words and function words Word forms: Verbs, nouns, adjectives, and adverbs Nouns: Countable and uncountable; singular and plural forms Basic sentence structures; simple question form: Wh-questions; word order in sentences	1
5	“How to Fashion Your Own Brand of Success” by Howard Whitman	2
6	“How to Recognize Your Failure Symptoms” by Dorthea Brande	2
7	Revision/Seminars	1
<b>Unit-II An excerpt from The District School As It Was by One Who Went to It</b> <b>by Warren Burton Theme: On Campus (8 hrs)</b>		
8	Reading Comprehension: Identifying sequence of ideas, recognizing verbal techniques that help link the ideas in a paragraph	1
9	Writing: Paragraph writing (specific topics) using suitable cohesive devices; using key words/phrases and organizing points in a coherent manner, mechanics of writing: punctuation, capital letters	1
10	Grammar and Vocabulary: Cohesive devices-linkers, signposts and transition signals; use of articles and zero articles, prepositions	1
11	“How to Conquer the Ten Most Common Causes of Failure” by Louis Binstock	2
12	“How to Develop Your Strength to Seize Opportunities” by Maxwell Maltz	2
13	Revision/Seminars	1
<b>Unit-III The Future of Work?</b> <b>Theme: Working Together (8 hrs)</b>		
15	Reading Comprehension: Reading a text in detail by making	1

	basic inferences, recognizing and interpreting specific context clues, strategies to use text clues for comprehension	
16	Writing: Summarizing-identifying main idea/s, rephrasing what is read, avoiding redundancies and repetitions	1
17	Grammar and Vocabulary: Verbs-tenses; subject-verb agreement; direct and indirect speech, reporting verbs for academic purposes	1
18	“How to Make the Most of Your Abilities” by Kenneth Hildebrand	2
19	“How to Raise Your Self-Esteem and Develop Self-confidence” by James W Newman	2
20	Revision/Seminars	1
<b>Unit-IV H.G Wells and the Uncertainties of Progress by Peter J. Bowler Theme: Fabric of Change (11 hrs)</b>		
21	Reading Comprehension: Understand and interpret graphic elements used in texts (convey information, reveal trends/patterns/relationships, communicate processes or display data)	1
22	Writing: Information transfer, describe, compare, contrast, identify significance/trends based on information provided in figures/charts/graphs/tables	3
23	Grammar and Vocabulary: Quantifying expressions-adjectives and adverbs, comparing and contrasting, degrees of comparison, use of antonyms	2
24	“How to Win Your War Against Negative Feelings” by Dr Maxwell Maltz	2
25	“How to Find the Courage to Take Risks” by Tom Rust and Randy Reed	2
26	Revision/Seminars	1
<b>Unit-V Leaves from the Mental Portfolio of a Eurasian by Sui Sin Far Theme: Tools for Life (14 hrs)</b>		
27	Reading for comprehension: Exercises	1
28	Writing: Writing structured essays on specific topics using suitable claims and evidence	2
29	Grammar and Vocabulary: reinforcing learning: articles, prepositions, tenses, subject-verb agreement	2
30	“How to Become a Self-Motivator” by Charles T Jones	2
31	“How to Eliminate Your Bad Habits” by Benjamin Franklin	2
32	Revision/Seminars	1
33	Consolidation of Learning in classroom and language lab	4
	<b>Total</b>	<b>50</b>

**Textbooks**

1. *English All Round: Communication Skills for Undergraduate Learners- Volume 1*, Orient Black Swan, 2019
2. *University of Success* by OgMandino, Jaico, 2015.

**Reference Books**

1. Bailey, Stephen. *Academic writing: A handbook for international students*. Routledge, 2014.
2. Chase, Becky Tarver. *Pathways: Listening, Speaking and Critical Thinking*. Heinley ELT; 2nd Edition, 2018.
3. Skillful Level 2 Reading & Writing Student's Book Pack (B1) Macmillan Educational.
4. Hewings, Martin. *Cambridge Academic English (B2)*. CUP, 2012.

**AICTE Recommended Books**

1. Meenakshi Raman and Sangeeta Sharma. *Technical Communication*. Oxford University Press, 2018.
2. Pushplata and Sanjay Kumar. *Communication Skills*, Oxford University Press, 2018.
3. Kulbushan Kumar. *Effective Communication Skills*. Khanna Publishing House, Delhi

# Basic Sciences Courses

## MATHEMATICS – I

S. No	Topic	No. of Lectures
<b>UNIT-I Differential Equations of First Order and First Degree (10hrs)</b>		
1	Introduction	1
2	Linear Differential Equations	2
3.	Bernoulli's form of differential equations	1
4.	Exact form of differential equations	1
5.	Differential equations reducible to exact form	1
6.	Newton's law of cooling	1
7.	Law of natural growth and decay	1
8.	Orthogonal trajectories	1
9.	Electrical circuits	1
<b>UNIT-II Linear Differential Equations of Higher Order (10hrs)</b>		
10.	Non-Homogeneous equations of higher order with constant coefficients	1
11.	Non-Homogeneous term of type $e^{ax}$	1
12.	Non-Homogeneous term of type $\sin ax$ or $\cos ax$	1
13.	Non-Homogeneous term of type polynomials in $x^m$	1
14.	Non-Homogeneous term of type $e^{ax}V(x)$	2
15.	Non-Homogeneous term of type $x^mV(x)$	1
16.	Method of variation of parameters	1
17.	LCR circuits	1
18.	Simple harmonic motion	1
<b>UNIT-III Mean Value Theorems (10hrs)</b>		
19.	Rolle's Theorem	2
20.	Lagrange's mean value theorem	2
21.	Cauchy's mean value theorem	2
22.	Taylor's and Mc Laurent's theorems with remainders	4
<b>UNIT-IV Partial Differentiation (10hrs)</b>		
23.	Introduction- Homogeneous Function	1
24.	Euler's Theorem	1
25.	Total derivative and Chain Rule	2
26.	Jacobian	2
27.	Functional dependence	1
28.	Taylor's and Mc Laurent's series expansion of function of two variables	1

29.	Maxima and minima of function of two variables without constraints	1
30.	Maxima and minima of function of two variables with constraints (Lagrange's Method)	1
<b>UNIT-V Multiple Integrals (10hrs)</b>		
31.	Double Integrals	2
32.	Double integral by change of order of integration	2
33.	Double integral by change of variables	2
34.	Triple integration	2
35.	Areas by double integrals	1
36.	Volumes by triple integrals	1
	<b>Total Hours</b>	<b>50</b>

### Textbooks

1. B. S. Grewal, *Higher Engineering Mathematics*, 44<sup>th</sup> Edition, Khanna Publishers.

## MATHEMATICS – II

S. No	Topic	No. of Lectures
<b>UNIT-I Iterative Methods (10hrs)</b>		
1	Introduction	1
2	Bisection method	2
3.	Method of false position	2
4.	Iteration method	1
5.	Newton-Raphson method (one variable)	1
6.	Jacobi method	1
7.	Gauss-Seidel method	2
<b>UNIT-II Interpolation (10hrs)</b>		
10.	Introduction	1
11.	Finite differences	2
12.	Relation between operators	1
13.	Newton's forward interpolation formula	1
14.	Newton's backward interpolation formula	1
15.	Gauss forward interpolation formula	1
16.	Gauss backward interpolation formula	1
17.	Lagrange's interpolation formula	1
18.	Newton's divide difference formula	1
<b>UNIT-III Numerical Integration and Solution of Ordinary Differential Equations (10hrs)</b>		
19.	Trapezoidal rule	1
20.	Simpson's $1/3^{\text{rd}}$ and $3/8^{\text{th}}$ rules	1
21.	Solution of ordinary difference equations by Taylor's series method	2
22.	Solution of ordinary difference equations by Picard's method	1
23.	Solution of ordinary difference equations by Euler's method	1
24.	Solution of ordinary difference equations by modified Euler's method	2
25.	Solution of ordinary difference equations by Runge-Kutta method	2
<b>UNIT-IV Laplace Transforms (10hrs)</b>		
26.	Laplace transforms of standard functions	2
27.	Shifting theorems	1
28.	Laplace transforms of derivatives and integrals	1
29.	Unit step function, Dirac's delta function	1
30.	Periodic function	1
31.	Inverse Laplace transforms	1

32.	Convolution theorem	1
33.	Evaluation of integrals using Laplace transforms	1
34.	Solving of ordinary differential equations using Laplace transforms	1
<b>UNIT-V Fourier Series and Fourier Transforms (10hrs)</b>		
35.	Introduction	1
36.	Fourier series of periodic functions	1
37.	Fourier series of even and odd functions	1
38.	Half-range Fourier sine and cosine series	1
39.	Fourier integral theorem	1
40.	Fourier sine and cosine integrals	1
41.	Fourier sine and cosine transforms	1
42.	Properties of Fourier transforms	1
43.	Inverse Fourier transforms	1
44.	Finite Fourier transforms	1
	<b>Total Hours</b>	<b>50</b>

#### **Textbooks**

2. B. S. Grewal, *Higher Engineering Mathematics*, 44<sup>th</sup> Edition, Khanna Publishers.

#### **Reference Books**

1. B. V. Ramana, *Higher Engineering Mathematics*, 2007 Edition, Tata Mc. Graw Hill Education.
2. H. K. Das, *Advanced Engineering Mathematics*, 22<sup>nd</sup> Edition, S. Chand & Company Ltd.
3. Erwin Kreyszig, *Advanced Engineering Mathematics*, 10<sup>th</sup> Edition, Wiley-India.

**APPLIED/ENGINEERING PHYSICS (COMMON TO ALL)**

S. No	TOPIC	No. of Hrs.
<b>UNIT-I WAVE OPTICS (10hrs)</b>		
	<b>INTERFERENCE</b>	
1	Introduction, Principle of superposition and Interference of light	1
2	Conditions for sustained interference and Coherence and Types of interference	1
3	Interference in thin films by reflection (cosine's law)	1
4	Colours in thin films - Newton's Rings (reflected geometry)	1
5	Newton's rings, Applications of Newton's rings	1
	<b>DIFFRACTION</b>	
6	Introduction and diffraction of light, Types of diffraction, Differences between interference and diffraction	1
7	Fraunhofer diffraction due to single slit and Intensity distribution curves (quantitative)	1
8	Fraunhofer diffraction due to circular aperture (qualitative)	1
9	Fraunhofer diffraction due to double slit (qualitative)	
10	Fraunhofer diffraction due to grating (N- slits) (qualitative)	
11	Grating spectrum and missing orders	1
12	Rayleigh's criterion for resolving power, Resolving power of grating, Telescope and Microscope (all qualitative)	1
<b>UNIT-II LASERS and HOLOGRAPHY (10 hrs)</b>		
	<b>LASERS</b>	
13	Introduction to LASERS, Coherent source, Characteristics of lasers	1
14	Spontaneous and Stimulated emission of radiation	1
15	Population inversion, Einstein's coefficients	1
16	Pumping mechanisms	1
17	Ruby laser	1
18	Helium-Neon laser	
19	Applications of Lasers	1
	<b>HOLOGRAPHY</b>	
20	Introduction and Principle of holography	1
21	Differences between photography and holography	1
22	Construction and reconstruction of hologram	1
23	Applications of holography	1

**UNIT-III MAGNETISM & DIELECTRICS (10 hrs)**

<b>MAGNETISM</b>		
24	Introduction to Magnetism, Magnetic dipole moment, Magnetization, Magnetic susceptibility and Permeability	1
25	Origin of magnetic moment and Bohr magneton	1
26	Classification of Magnetic materials: Dia, Para and Ferro	1
27	Domain concept of Ferromagnetism	1
28	Hysteresis	
29	Soft and hard magnetic materials, Applications of magnetic materials	1
<b>DIELECTRICS</b>		
30	Introduction, Dielectric polarization, Dielectric polarizability, susceptibility and Dielectric constant	1
31	Types of polarizations: Electronic (quantitative), ionic (quantitative) and orientational (qualitative)	1
32	Lorentz Internal field	1
33	Clausius-Mossotti's equation, Frequency dependence of polarization	1
34	Applications of Dielectrics	1

**APPLIED PHYSICS (Except CIV & MEC)**

<b>UNIT-IV QUANTUM MECHANICS (10 hrs)</b>		
35	Introduction to Matter waves	1
36	de Broglie's hypothesis	1
37	Davisson and Germer's experiment	1
38	G. P. Thomson experiment	1
39	Heisenberg's uncertainty principle	1
40	physical significance of Schrodinger wave function	1
41	Schrodinger Time Independent wave equation	1
42	Schrodinger Time Dependent wave equation	1
43	Particle in one dimensional box (determination of energy)	2
<b>UNIT-V SEMICONDUCTOR PHYSICS (10 hrs)</b>		
44	Introduction and Origin of energy bands (qualitative)	1
45	Classification of solids based on energy bands	1
46	Intrinsic semiconductor and density of charge carriers	2
47	Electrical Conductivity and Fermi level	1
48	Extrinsic Semiconductors	1
49	p-type and n-type density of charge carriers	1
50	Drift and Diffusion	1
51	Einstein's Equation	1
52	Hall Effect, Hall co-efficient and its applications	1
<b>TOTAL CLASSES</b>		<b>50</b>

**ENGINEERING PHYSICS (CIV AND MEC)**

S. No	TOPIC	No. of Hrs.
<b>UNIT-IVACOUSTICS &amp; ULTRASONICS (10 hrs)</b>		
	<b>ACOUSTICS</b>	
35	Introduction to acoustics	1
36	Reverberation and Reverberation time	
37	Sabine's formula	1
38	Absorption coefficient	
39	Absorption coefficient determination	1
40	Factors affecting acoustics of buildings and their remedies	1
	<b>ULTRASONICS</b>	
41	Introduction and Properties of Ultrasonics	1
42	Production of ultrasonics by Magnetostriction method	
43	Production of ultrasonics by Piezoelectric method	1
44	Non-Destructive Testing: Pulse echo system through transmission and reflection modes	1
45	A, B and C – scan displays	1
46	Applications of Ultrasonics	1
<b>UNIT-V ELASTICITY (10 hrs)</b>		
47	Introduction to Elasticity, Stress & Strain	1
48	Stress & Strain curve (Behaviour of a wire under increasing load)	1
49	Generalized Hooke's law	1
50	Different types of moduli: young's modulus, Bulk modulus, Rigidity modulus and Poisson's ratio	2
51	Relations among moduli	1
52	Bending of Beams	1
53	Bending Moment of a beam	1
54	Dispersion of a Cantilever	2
<b>TOTAL CLASSES</b>		<b>50</b>

**Textbooks**

1. Pandey, B. K. and Chaturvedi, S. *Engineering Physics*. Cengage, 2012.
2. Avadhanulu, M. N. and Kshirsagar, P. G. *A Textbook of Engineering Physics*. S. Chand, 2017.
3. Bhattacharya, D. K. and Tandon Poonam. *Engineering Physics*. Oxford press, 2015.
4. Gaur, R. K. and Gupta, S. L. *Engineering Physics*. Dhanpat Rai publishers, 2012.

**Reference Books**

1. *Engineering Physics* by M. R. Srinivasan, New Age international publishers, 2009.
2. *Optics* by Ajoy Ghatak, 6<sup>th</sup> Edition McGraw Hill Education, 2017.
3. *Solid State Physics* by A. J. Dekker, McMillan Publishers, 2011.

**ENGINEERING/APPLIED CHEMISTRY (COMMON TO ALL)**

S. No.	Topic	No. of Lectures
<b>UNIT-IPOLYMER TECHNOLOGY (10 hrs)</b>		
1	Polymers-Introduction to polymers, functionality of monomers	1
2	Methods of polymerisation-Emulsion and suspension	1
3	Physical and mechanical properties	1
4	Plastics- Compounding of plastics	
5	Fabrication (compression, injection, blown film, extrusion)	1
6	Preparation,properties and applications of PVC, polycarbonates and Bakelite	1
7	Mention some examples of plastic materials used in electronic gadgets ,recycling of e-plastic waste.	1
8	<b>Elastomers</b> - Natural rubberDrawbacks,Vulcanization	1
9	Preparation-Properties and applications of synthetic rubbers (Buna S, thiokol and polyurethanes)	
10	<b>Composite Materials</b> - Fiber reinforced plastics-CFRP and GFRP	1
11	<b>Conducting polymers</b> - Polyacetylene, doped conducting polymers -p-type and n-type doping	1
12	<b>Bio degradable polymers</b> - Biopolymers and biomedical polymers	1
<b>UNIT-II ELECTROCHEMICAL CELLS AND CORROSION (10hrs)</b>		
13	Introduction to Electro chemistry, Electrochemical series and its uses	1
14	Construction & working of standard hydrogen electrode, calomel electrode, glass electrode	1
15	Single electrode potential ,concentration cells	1
16	Batteries – Dry cell, Ni-Cd cell, Ni-Metal hydride cell, Li-ion battery, Zinc-air cell	1
17	Fuel cells- H <sub>2</sub> –O <sub>2</sub> , CH <sub>3</sub> OH-O <sub>2</sub>	1
18	Phosphoric acid, molten carbonate fuel cells	
19	<b>Corrosion</b> -Definition-theories of corrosion- chemical and electrochemical	1
20	Factors influencing rate of corrosion	1
21	Types of corrosion- galvanic corrosion, differential aeration corrosion, stress corrosion, water-line corrosion	1
22	Passivity of metals-galvanic series ,corrosion	1

	control: (proper designing, cathodic protection) protective coatings: cathodic and anodic coatings	
23	Electroplating, electroless plating (nickel), paints (constituents and its functions)	1

### APPLIED CHEMISTRY (Except CIV & MEC)

S. No.	Topic	No. of Lectures
<b>UNIT-III MATERIAL CHEMISTRY (10 hrs)</b>		
24	<b>Non-elemental semiconducting materials</b> - Stoichiometric, controlled valency & chalcogen photo/semiconductors	1
25	Preparation of semiconductors-distillation, zone refining, Czochralski crystal pulling technique	1
26	Semiconductor devices -p-n junction diode as rectifier, junction transistor	1
27	<b>Insulators &amp; magnetic materials</b> - Electrical insulators, ferro and ferri magnetism-Hall effect and its application	1
28	<b>Nano materials</b> - Introduction, sol-gel method	1
29	Preparation of carbon nanomaterials by carbon-arc, laser ablation methods	1
30	Types, applications of graphene-carbon nanotubes and fullerenes	1
31	Characterization by BET, SEM and TEM methods	1
32	<b>Liquid crystals</b> - Introduction-types-applications.	1
33	<b>Superconductors</b> -Meissner effect, type- I and type-II super conductors, characteristics and applications.	1
<b>UNIT-IV ADVANCED CONCEPTS AND GREEN CHEMISTRY (10 HRS)</b>		
34	<b>Molecular switches and machines</b> - Introduction to supramolecular chemistry	2
35	Characteristics of molecular motors and machines.	1
36	Rotaxanes and Catenanes as artificial molecular machines	1
37	Prototypes linear motions in Rotaxanes, and acid-base controlled molecular shuttle,	1
38	A molecular elevator, an autonomous light – powered molecular motors	1
39	Natural molecular motors and machines	1
40	<b>Green chemistry</b> - Principles of green chemistry	1
41	Green synthesis – aqueous phase, microwave	2

	assisted chemical reactions and phase transfer catalysis (PTC)	
<b>UNIT-V SPECTROSCOPIC TECHNIQUES &amp; NON-CONVENTIONAL ENERGY SOURCES (10 HRS)</b>		
42	<b>Spectroscopic Techniques-</b> Electromagnetic spectrum-types of molecular spectra and their absorption criteria	1
43	<b>UV-visible spectroscopy</b> (electronic spectroscopy), Frank-Condon principle, Beer-Lambert's law and its limitations	1
44	Chromophores and auxochromes – applications of UV visible spectroscopy	1
45	<b>IR spectroscopy</b> – functional group and finger print region	1
46	Molecular vibrations – stretching and bending vibrations –applications of IR	1
47	<b>NMR</b> (Nuclear magnetic resonance)- Working principle and instrumentation of NMR	1
48	chemical shift( $\delta$ ) – applications of NMR	1
49	<b>Non-conventional energy sources-</b> Design, working, schematic diagram, advantages and disadvantages of photovoltaic cell, organic photo-voltaic hydropower, geothermal power, tidal, ocean thermal energy conversion (OTEC) open cycle OTEC, closed cycle OTEC and hybrid cycle OTEC	1
	<b>TOTAL</b>	<b>50</b>

**Topics to be covered beyond the syllabus**

S. No	UNIT	TOPIC	No. of Lectures
1	I	Aramid polymers as bullet proof materials	1
2	II	Battery of future-Li-TiS <sub>2</sub>	1
3	III	Transformer oils	1
4	IV	Green synthetic methods- microwave assisted chemical reactions	1
5	V	Non-conventional energy source - wind energy	1

**ENGINEERING CHEMISTRY (CIV AND MEC)**

S. No.	Topic	No. of Lectures
<b>UNIT-III CHEMISTRY OF MATERIALS (10 hrs)</b>		
24	<b>Nano materials</b> - Introduction, sol-gel method	1

25	Preparation of carbon nanomaterials by carbon-arc, laser ablation methods	1
26	Types, applications of graphene-carbon nanotubes and fullerenes	1
27	Characterization by BET, SEM and TEM methods	1
28	<b>Refractories-</b> Definition, classification,	1
29	Properties (refractoriness, refractoriness under load, porosity and thermal spalling), failure of refractories	
30	<b>Lubricants-</b> Definition, mechanism of lubricants	1
31	Properties (definition and importance)	1
32	<b>Cement-</b> Constituents, manufacturing	1
33	Parameters to characterize the clinker formation: lime saturation factor (LSF), silica ratio (SR), and alumina ratio (AR)	1
34	Chemistry of setting and hardening, deterioration of cement	1
<b>UNIT-IV FUELS (10 hrs)</b>		
35	Introduction-calorific value - HCV and LCV	1
36	Problems using Dulong's formula	1
37	Proximate and ultimate analysis of coal sample – significance of these analysis– problems	2
38	Petroleum refining	1
39	Cracking	1
40	Synthetic petrol (Fischer-Tropsch & Bergius)	1
41	Petrol knocking, diesel knocking – octane and cetane rating – anti-knocking agents	1
42	Flue gas analysis by Orsat apparatus – rocket fuels	1
43	Introduction to alternative fuels - bio-diesel, ethanol, methanol, natural gas, LPG, CNG	1
<b>UNIT-V WATER TECHNOLOGY (10 hrs)</b>		
44	Introduction to Hardness of water, types of hardness	1
45	Determination of hardness by complexometric method	1
46	Boiler troubles -priming and foaming, scale formation	1
47	Boiler corrosion, caustic embrittlement	1
48	Internal treatments	1
49	Softening of hard water - zeolite process and ion exchange process	1
50	Treatment of industrial waste water	1
51	Potable water and its specifications	1
52	Steps involved in purification of water- chlorination, break point chlorination	1

53	Reverse osmosis and electro dialysis	1
	<b>TOTAL</b>	<b>50</b>

#### Topics to be covered beyond the syllabus

S. No	UNIT	TOPIC	No. of Lectures
1	I	Aramid polymers as bullet proof materials	1
2	II	Battery of future-Li-TiS <sub>2</sub>	1
3	III	Transformer oils	1
4	IV	Reforming of gasoline fuels	1
5	V	Municipal water treatment methods	1

#### Reference Books

1. *A text book of Engineering Chemistry* by S.S. Dara, S. S. Umare; S. Chand & Co., Ltd., Latest Edition.
2. *Engineering Chemistry* by Shashi Chawla; Dhanpat Rai Publishing Co., Latest Edition.

#### Textbooks

1. *Engineering Chemistry* by Jain & Jain; Dhanpat Rai Publishing Co., Latest Edition
2. *Engineering Chemistry* by Shikha Agarwal; Cambridge University Press, 2019 Edition.
3. *Engineering Chemistry* by Prasanth Rath, B. Ramadevi, Ch. Venkata Ramana Reddy, Subendu Chakravarthy; Cengage Publications, 2019 Edition.

## Engineering Sciences Courses

### ENGINEERING MECHANICS (CIV & MEC)

S. No	Topic	Reference textbook	No of lectures
<b>UNIT-I INTRODUCTION TO ENGINEERING MECHANICS</b>			
1	<b>Force systems:</b> Basic Concepts	S.P. Timoshenko and D.H. Young, Engineering Mechanics	1
2	Resultant of coplanar concurrent forces		1
3	Components of force in space		1
4	Moment of force and its applications		1
5	couples and resultant of force systems		1
6	Equilibrium of Force Systems		1
7	Free body diagram, Equations of equilibrium		2
8	Equilibrium of planar and spatial system.		2
<b>Sub total</b>			<b>10</b>
<b>UNIT-II ANALYSIS OF STRUCTURES AND FRICTION</b>			
1	<b>Trusses:</b> Introduction	S.P. Timoshenko and D.H. Young, Engineering Mechanics	1
2	Analysis of trusses by method of joints		3
3	method of sections		2
4	<b>Friction:</b> Introduction to Friction		1
5	Laws of friction,		1
6	Application to simple systems and Connected systems.		2
<b>Sub total</b>			<b>10</b>
<b>UNIT-III CENTROID AND CENTRE OF GRAVITY, AREA MOMENT OF INERTIA AND MASS MOMENT INERTIA</b>			
1	<b>Centroid:</b> Centroid of simple figures from basic principles	Engineering Mechanics, Tayal A.K.	2
2	centroid of composite sections;		2
3	<b>Centre of Gravity:</b> Center of gravity of simple body from basic principles		2
4	Center of gravity of composite bodies		1
5	Pappus theorems.		1
6	<b>Area moments of Inertia:</b> Definition – Polar Moment of Inertia		1
7	Transfer Theorem		1
8	Moments of Inertia of Composite Figures,		1
9	mass moment of inertia of composite bodies		1
<b>Sub total</b>			<b>12</b>

<b>UNIT-IV INTRODUCTION TO KINEMATICS AND KINETICS</b>			
1	<b>Kinematics:</b> Rectilinear and Curvilinear motions	S.P. Timoshenko and D.H. Young, Engineering Mechanics	1
2	Velocity and Acceleration		1
3	Motion of Rigid Body – Types and their Analysis in Planar Motion		2
4	<b>Kinetics:</b> Analysis as a Particle and Analysis as a Rigid Body in Translation		2
5	Central Force Motion		1
6	Equations of Plane Motion		2
7	Fixed Axis Rotation – Rolling Bodies.		1
<b>Sub total</b>			<b>10</b>
<b>UNIT-V WORK -ENERGY METHOD</b>			
1	<b>Work – Energy Method:</b> Equations for Translation	Mechanics for Engineers, statics - F.P. Beer & E.R. Johnston	2
2	Work-Energy Applications to Particle Motion		2
3	Connected System-Fixed Axis Rotation and Plane Motion		2
4	Impulse momentum method		2
<b>Sub total</b>			<b>8</b>
<b>Total</b>			<b>50</b>

### Textbooks

1. Reddy Vijay Kumar K. and K. Suresh Kumar (2010), *Singer's Engineering Mechanics*.
2. S.P. Timoshenko and D.H. Young, *Engineering Mechanics*, McGraw-Hill International Edition, 1983.
3. Tayal A.K. (2010), *Engineering Mechanics*, Umesh Publications

### Reference Books

1. *Engineering Mechanics statics and dynamics* – R.C. Hibbeler, 11th Edn – Pearson Publ.
2. *Mechanics for Engineers, statics - F.P. Beer & E.R. Johnston* – 5th Edn McGraw Hill Publ.
3. *Engineering Mechanics statics and dynamics*, A Nelson, McGraw Hill publications

### E-Resources

1. <http://nptel.ac.in/>
2. <http://mhrd.gov.in/e-contents>
3. <http://spoken-tutorial.org>

**PROBLEM SOLVING USING C (Common to All)**

S.No	Topic	No. of Hours	Reference
<b>UNIT-I</b>			
1	<b>Introduction to Computers:</b> hardware, Memory Hierarchy	2	T1, T3
2	Types of Computers, Types of Software – OS, Translators, Device Drivers & Packages	1	T1, T3
3	Algorithms & characteristics	2	T1, T3
5	Program Development Steps	1	T1, T2
6	Structure of a C program	1	T1
7	Features of C & standard I/O	1	T1
8	Programming Style – Indentation, Comments, Identifiers, Data Types	1	T1
9	Operator Precedence and Associativity	1	T1
10	Variable Declarations, Format Specifiers, Escape sequence Types of Statements	1	T1
11	Type conversions, Math I/O	1	T1, T2
<b>Total no. of classes ----- 12</b>			
<b>UNIT-II</b>			
12	Selection Statements – if, if else, nested if	1	T1, T3, R2
13	Multi-way selection: switch	1	T1, T3, R2
14	Problem solving using selection control	2	T1, T3, R2
15	Repetition: Basic loop structures, pre-test & post-test loop, Counter controlled, Condition controlled loops, while & do while	2	T1, T3, R2
16	Branching: break & continue	1	T1, T3, R2
17	Modular programming – functions and parameter declaration	1	T1, T2
18	Returning values, types of parameter	1	T1, T2
19	Recursion- Definition, base condition	1	T1,T2
<b>Total no. of classes ---- 10</b>			
<b>UNIT-III</b>			
20	Introduction to arrays, Array Initialization, Input & output of an array	1	T1, T3
21	Problem solving using 1D Arrays	1	T1, T3, R2
22	Array as arguments	1	T1, T3, R2
23	Introduction to 2D arrays – Matrix operations	2	T1, T3, R2
24	2D array as argument	1	T1, T3, R2
25	Introduction to Strings, String I/O, String processing	1	T1, T3, R2

26	Problem solving using Strings	1	T1, T3, R2
27	Strings as argument	2	T1, T3, R2
<b>Total no. of classes ---- 10</b>			
<b>UNIT-IV</b>			
28	Concept of pointers, Initialization of pointer variables	1	T1, T3, R2
29	Problem solving using pointers	1	T1, T3, R2
30	Pointer as argument	1	T1, T3, R2
31	Character Pointers	1	T1, T3, R2
32	Pointer to pointer, Array of pointers Vs Pointer to array	1	T1, T3, R2
33	Dangling pointer	1	T1, T3, R2
34	Dynamic memory management	1	T1, T2, R1
35	Command line argument	1	T1, T2, R1
36	Introduction to Structures, Declaration & Initialization, accessing members	1	T1, T2, R1
37	Nested structures, Array of structures	1	T1, T2, R1
38	Structure as argument & pointer to a structure	1	T1, T2, R1
39	Self referential structures	1	T1, T2, R1
40	Union, type def, enum and bit fields	1	T1, T2, R1
<b>Total no. of classes ---- 13</b>			
<b>UNIT-V</b>			
41	Storage classes	1	T1, T2
42	Introduction to File handling	1	T1, T2
43	File handling functions – reading, writing data & records	3	T1, T2
44	Random access file operations	1	T1, T2
45	File copy, merge	1	T1, T2
<b>Total no. of classes ---- 7</b>			
<b>Total number of classes: 50</b>			

#### Textbooks

- T1. ANSI C Programming, E Balaguruswamy, Mc-GrawHill, 5<sup>th</sup> Edition
- T2. ANSI C Programming, Gary J. Bronson, Cengage Learning.
- T3. Programming in C, ReemaThareja, OXFORD Publications

#### Reference Books

- R1. C Programming-A Problem Solving Approach, Forouzan, Gilberg, Cengage.
- R2. Let us C, Yashwant Kanetkar, BPB Publications, Mastering in C, KR Venu Gopal, TMH

**PROBLEM SOLVING USING PYTHON (Except CIV & MEC)**

S.No	Topic	No. Of Hours	Textbook & Reference
<b>Unit-1</b>			
1	<b>Introduction:</b> Introduction to Python, Program Development Cycle	1	T1 & R1
2	Input, Processing, and Output, Displaying Output with the Print Function	1	T1 & R1
3	Comments, Variables, Reading Input from the Keyboard,	1	T1 & R1
4	Performing Calculations, Operators	1	T1 & R1
5	Type conversions, Expressions, More about Data Output.	1	T1 & R1
6	<b>Data Types, and Expression:</b> Strings Assignment, and Comment, Numeric Data Types	1	T1 & R1
7	Character Sets, Using functions and Modules.	1	T1 & R1
8	<b>Decision Structures and Boolean Logic:</b> if, if-else, if-elif-else Statements, Nested Decision Structures, Comparing Strings, Logical Operators, Boolean Variables.	1	T1 & R1
9	<b>Repetition Structures:</b> Introduction, while loop, for loop, Calculating a Running Total, Input Validation Loops, Nested Loops.	2	T1 & R1
<b>Number of classes</b>		<b>10</b>	
<b>Unit-2</b>			
10	<b>Control Statement:</b> Definite iteration for Loop Formatting Text for output	2	T2
11	Selection if and if else Statement Conditional Iteration The While Loop	2	T2
12	<b>Strings and Text Files:</b> Accessing Character and Substring in Strings, Data Encryption	3	T1
13	Strings and Number Systems, String Methods Text Files.	3	T1
<b>Number of classes</b>		<b>10</b>	
<b>UNIT-3</b>			
14	Lists, Defining Simple Functions	2	T1 & R1
15	Dictionaries	2	T1 & R1

16	<b>Design with Function:</b> Functions as Abstraction Mechanisms	2	T1 & R1
17	Design with Recursive Functions, Case Study Gathering Information from a File System	2	T1 & R1
18	Modules: Modules, Standard Modules, Packages.	2	T1 & R1
	<b>Number of classes</b>	<b>10</b>	
<b>UNIT-4</b>			
19	<b>File Operations:</b> Reading config files in python, Writing log files in python	1	T1 & R1
20	Understanding read functions, read(), readline() and readlines()	1	T1 & R1
21	Understanding write functions, write() and writelines()	1	T1 & R1
22	Manipulating file pointer using seek, Programming using file operations	1	T1 & R1
23	<b>Object Oriented Programming:</b> Concept of class, object and instances, Constructor, class attributes and destructors	1	T1 & R1
24	Real time use of class in live projects, Inheritance	1	T1 & R1
25	overlapping and overloading operators	1	T1 & R1
26	Adding and retrieving dynamic attributes of classes, Programming using Oops support	1	T1 & R1
27	Design with Classes: Objects and Classes, Data modeling Examples	1	T1 & R1
28	Case Study An ATM, Structuring Classes with Inheritance and Polymorphism	1	T1 & R1
	<b>Number of classes</b>	<b>10</b>	
<b>UNIT-5</b>			
37	<b>Errors and Exceptions:</b> Syntax Errors, Exceptions	1	T1 & R1
38	Handling Exceptions, Raising Exceptions, User-defined Exceptions	1	T1 & R1
39	Defining Clean-up Actions, Redefined Clean-up Actions	2	T1 & R1
40	<b>Graphical User Interfaces:</b> The Behaviour of Terminal Based Programs and GUI-Based	2	T1 & R1
41	Simple GUI-Based Programs, and other	2	T1 & R1

	useful GUI Resources.		
42	<b>Programming:</b> Introduction to Programming Concepts with Scratch.	2	T1 & R1
	<b>Number of classes</b>	<b>10</b>	
	<b>Total number of classes</b>	<b>50</b>	

**Textbooks**

- T1. *Python Programming: A Modern Approach*, VamsiKurama, Pearson
- T2. *Learning Python*, Mark Lutz, Orielly

**Reference Books**

- R1. *Think Python*, Allen Downey, Green Tea Press
- R2. *Core Python Programming*, R Nageswara Rao, Dreamtech
- R3. *Introduction to Python*, Kenneth A. Lambert, Cengage

## BASICS OF ELECTRICAL & ELECTRONICS ENGINEERING

(CIV, MEC, CSE, IT, AID, AIM, CSM, CSO & CIC)

No.	Topic	No. of Periods
<b>UNIT-I: DC &amp; AC Circuits (12 hrs)</b>		
<b>DC Circuits:</b> Electrical circuit elements (R - L and C) – Kirchhoff's laws -Voltage and Current division rules series, parallel circuits and star-delta and delta-star transformations- [Elementary treatment only]		
<b>AC Circuits:</b> Representation of sinusoidal waveforms - Peak and RMS values - phasor representation - real power - reactive power - apparent power - power factor. [Elementary treatment only]		
1	Introduction	1
2	Electrical circuit elements (R - L and C)	1
3	Kirchhoff's laws -Voltage and Current division rules	1
5	series, parallel circuits	1
6	star-delta and delta-star transformations	1
7	Representation of sinusoidal waveforms	1
8	Peak and RMS values	1
9	phasor representation	1
10	real power - reactive power - apparent power- power factor	1
12	Numerical Problems	1
<b>UNIT-II: DC Machines (10 hrs)</b>		
<b>DC Generator:</b> Construction-Principle and operation of DC Generator - EMF equation -Types– Applications [Elementary treatment only]		
<b>DC Motor:</b> Principle and operation of DC Motor – types-Torque equation - Speed control of DC Motor Brake test- Swinburne's test-Applications. [Elementary treatment only]		
13	Construction-Principle and operation of DC Generator	1
14	EMF equation of DC Generator	1
15	Types– Applications	2
16	Principle and operation of DC Motor– types	2
17	Torque equation	1
18	Speed control of DC Motor	1
19	Brake test on DC Shunt Motor	1
20	Swinburne's test-Applications.	1
<b>UNIT-III: AC Machines (10 hrs)</b>		
<b>Single Phase Transformer</b> Construction, Principle and operation of Single Phase Transformer –EMF Equation-Losses Efficiency. [Elementary treatment only]		
<b>Three Phase Induction Motor</b>		

Construction- Principle and operation of three phase Induction Motor-Types-Applications. [Elementary treatment only]

21	Construction of Single Phase Transformer	1
22	Principle and operation of Single Phase Transformer	1
23	EMF Equation	1
24	Losses Efficiency	1
25	Construction of three phase Induction Motor	2
26	Principle and operation of three phase Induction Motor	1
27	Types of three phase Induction Motor	2
28	Applications	1

#### **UNIT-IV: Semiconductor Devices (10 hrs)**

Semiconductor Physics, PN Junction Diode & Zener Diode-characteristics-Applications: Rectifiers (Half Wave Rectifier & Full Wave Rectifier). [Elementary treatment only], Clippers and Clampers.

29	Semiconductor Physics	1
30	PN Junction Diode-characteristics	1
31	Zener Diode-characteristics	2
32	Applications	1
33	Rectifiers	1
34	Half Wave Rectifier, Full Wave Rectifier	2
35	Clippers and Clampers	2

#### **UNIT-V Bipolar Junction Transistors (8 hrs)**

Construction and working of bipolar junction transistor, CB, CE and CC Configurations and characteristics. [Elementary treatment only], Transistors as amplifiers, op-amp basics.

36	Construction of bipolar junction transistor	1
37	working of bipolar junction transistor	1
38	CB Configurations and characteristics	2
39	CE Configurations and characteristics	2
40	CC Configurations and characteristics	2

**Total      50**

#### **Textbooks**

1. D. P. Kothari and I. J. Nagrath- "Basic Electrical Engineering
2. Electronic Devices and Circuits, R. L. Boylestad and Louis Nashelsky, 9th edition, PEI/PHI 2006.

## NETWORK ANALYSIS (ECE)

Unit No	Contents	Mapped CO
I	<p><b>DC Circuits-Basic Laws and Methods of Analysis (10 Hrs)</b>  <b>Basic Laws:</b> Introduction to circuit elements, Ohm's Law, Nodes, Branches, and Loops, Kirchhoff's Laws for DC circuits, Power Relations, Independent and dependent sources, ideal and practical sources, source transformation, Series Resistors and Voltage Division, Parallel Resistors and Current Division, Wye- Delta Transformations.  <b>Methods of Analysis:</b> Mesh Analysis, Mesh analysis with current sources, Nodal analysis and Nodal analysis with voltage sources.  <b>Applications:</b> Lighting Systems and Electricity Bills</p>	CO1
II	<p><b>Sinusoidal Steady State Analysis of AC circuits (10 Hrs)</b>  Review AC fundamentals, Phasor representation of sinusoidal waves, Phasor Relationships for Circuit Elements, Impedance and Admittance, Nodal Analysis, Mesh analysis, AC power analysis.  <b>Applications:</b> Power Measurement, Electricity Consumption Cost Bills</p>	CO2
III	<p><b>Circuit Theorems (10 Hrs)</b>  <b>Circuit Theorems for DC Circuits:</b> Linearity Property, Superposition Theorem, Thevenin's Theorem, Norton's Theorem, Maximum Power Transfer Theorem, and Reciprocity Theorem.  <b>Circuit Theorems for AC Circuits:</b> Thevenin's Theorem, Norton's Theorem and Maximum Power Transfer Theorem.  <b>Applications:</b> Source Modeling, Resistance Measurement</p>	CO3
IV	<p><b>Two Port Networks and Coupled Circuits (10 Hrs)</b>  <b>Two port Networks:</b> Introduction to Two Port networks, open circuit impedance parameters, short circuit admittance parameter, Transmission parameters, Hybrid parameters. Relationship among parameters, Interconnection of two-port networks: Series, Cascade and Parallel Connections  <b>Coupled circuits:</b> Self and Mutual inductances, dot convention, coefficient of coupling, Analysis of coupled circuits.  <b>Applications:</b> Transformer and Transistor Circuits, Ladder Network Synthesis.</p>	CO4

<b>V</b>	<b>DC Transients (10 Hrs)</b> <b>First Order Circuits:</b> Introduction to Transient and Steady State Analysis, Initial Conditions, The Source-Free RC Circuit, The Source-Free RL Circuit, Step Response of an RC Circuit, Step Response of an RL Circuit <b>Second Order Circuits:</b> The Source-Free Series RLC Circuit, Step Response of a Series RLC Circuit (Can Use Laplace Transform) <b>Applications:</b> Delay Circuits and Relay Circuits	<b>CO5</b>
	<b>Total</b>	<b>50</b>

### Learning Resources

#### Textbooks

1. Hayt, Kemmerly and Durbin “Engineering Circuit Analysis”, TMH 7th Edition, 2010.
2. Charles K Alexander and Mathew N O Sadiku, “Fundamentals of Electric Circuits”, Tata McGraw-Hill, 3rd Ed, 2009.

#### Reference Books

1. John D. Ryder “Networks, Lines and Fields”, PHI, 2nd edition, 2009.
2. Edminister “Electric Circuits – Schaum’s Outline Series”, McGraw-Hill, 2009.
3. 4. Ravish R., Network Analysis and Synthesis, 2/e, McGraw-Hill, 2015.

#### e- Resources & other digital material:

1. <https://nptel.ac.in/courses/108/104/108104139/>
2. <https://nptel.ac.in/courses/108/105/108105159/>

## BASIC CIRCUIT ANALYSIS (EEE)

S No	Topic	Hrs
1	<b>UNIT-I Introduction to Electrical Circuits</b> Introduction to Electrical Circuits	<b>10</b>
2	<b>Content beyond syllabus: Fundamental electrical terminology like voltage, current, resistors, inductors, capacitor, ohms law etc</b>	1
3	Passive components and their V-I relations	1
4	Sources (dependent and independent)	1
5	Kirchhoff's laws- problems	1
6	Network reduction techniques(series, parallel, series – parallel-problems)	1
7	star-to-delta and delta-to-star transformation-problems	1
8	Problems	1
9	source transformation technique,-problems	1
10	nodal analysis –problems	1
11	mesh analysis.-problems	
12	Problems	1
13	Bridge courses: Super node and super mesh concepts	
14	Problems	
12	<b>UNIT-II Single Phase A.C Systems</b> <b>Single Phase A.C Systems:</b> Periodic waveforms (determination of rms, average value and form factor)	<b>10</b>
13	<b>Content beyond syllabus: Basic terminology in types sources (AC&amp;DC), sinusoidal waveform and terms derived from it.</b>	1
14	Concept of phase angle and phase difference	1
15	Complex and polar forms of representations, steady state analysis of R	1
16	Problems	1
17	Complex and polar forms of representations, steady state analysis of L	1
18	Problems	1
19	Complex and polar forms of representations, steady state analysis of C	1
20	Problems	1
21	Power Factor and its significance – Real, Reactive power and apparent Power.	1
22	Problems	1

22	<b>UNIT – III: Resonance</b> Nodal analysis of AC Circuits	<b>10</b>
23	Nodal analysis of AC Circuits	4
24	Anti resonance and resonance	1
25	concept of band width and Quality factor.	1
26	Problems	2
27	<b>Content beyond syllabus: Parallel resonance</b>	2
27	<b>UNIT – V: Magnetic Circuits</b> Basic definition of MMF, flux and reluctance.	<b>10</b>
28	<b>Bridge course: Basic knowledge about permanent magnets and residual magnetism</b>	1
29	Analogy between electrical and magnetic circuits.	1
30	Faraday's laws of electromagnetic induction	1
31	Content beyond syllabus: Lenz's law	1
32	Concept of self and mutual inductance.	1
33	Problems	1
34	Dot convention	1
35	Coefficient of coupling	1
36	Composite magnetic circuit.	1
37	Analysis of series and parallel magnetic circuits	1
38	Problems	
<b>Total</b>		<b>50</b>

### **Textbook**

Engineering Circuit Analysis by William Hayt and Jack E. Kemmerly, McGraw Hill Company, 6th edition.

**BASIC ELECTRONIC DEVICES & CIRCUITS (EEE)**

Unit	Contents	Mapped CO
I	<p><b>Junction Diode Characteristics (10 Hrs)</b>  <b>P-N Junction Diode</b> Qualitative Theory of P-N Junction, P-N Junction as a Diode, Diode Equation (Qualitative), Volt-Ampere Characteristics, Temperature dependence of VI characteristic, Ideal versus Practical – Resistance levels (Static and Dynamic), Transition and Diffusion Capacitances, Diode Equivalent Circuits, Load Line Analysis, Breakdown Mechanisms in Semiconductor Diodes.</p> <p><b>Special Diodes</b>                      Zener Diode Characteristics, Principle of Operation LED and Photo Diode.</p>	CO1
II	<p><b>Diode Applications (10 Hrs)</b>  <b>Rectifiers:</b> Half wave rectifier, ripple factor, full wave rectifier, Harmonic components in a rectifier circuit Rectifier with Filters(Qualitative Treatment only): Inductor filter, Capacitor filter, Qualitative Treatment of L - section filter, Pi – section filter, Multiple L and pi -section and filter, and comparison of various filter circuits in terms of ripple factors Voltage Regulators: Simple circuit of a regulator using zener diode.</p>	CO2
III	<p><b>Transistor Characteristics (10 Hrs)</b>  <b>Bi-polar Junction Transistors (BJT):</b> Formation of N-P-N and P-N-P transistors, Transistor current components, Operation of BJT, BJT characteristics ( CE, CB configurations), Early effect, Current equations, Relation between Alpha and Beta, typical transistor junction voltage values and Limits of Operation, Transistor as an amplifier.</p> <p><b>Junction Field Effect Transistors(JFET):</b> Junction Field Effect Transistor (JFET) structure, Drain and Transfer Characteristics, Significance of Pinch-Off Voltage, JFET as an amplifier and switch, Comparison of BJT and JFET.</p>	CO3

<b>IV</b>	<p><b>Transistor Amplifiers (10 Hrs)</b>  <b>Biasing and Stabilisation:</b> Need for Proper Biasing, Q-point stability, Fixed and Voltage Divider biasing for BJT, Emitter Degeneration, Design of Self Biasing circuit, Thermal Stability considerations. Fixed, Voltage Divider biasing for JFET.</p> <p><b>Small Signal Low frequency analysis of BJT and FET amplifiers:</b> Small signal low frequency h-parameter model of BJT. Approximate model, Analysis of BJT amplifiers using Approximate model for CB,CC and CE configurations, Analysis of JFET Amplifiers, Analysis of CS, CD Amplifiers.</p>	<b>CO4</b>
<b>V</b>	<p><b>Feedback Amplifiers (10 Hrs)</b>  <b>Negative Feedback Amplifiers:</b> Concept of feedback, Classification of feedback amplifiers, General characteristics of negative feedback amplifiers, Effect of Feedback on input and output characteristics, Voltage series, voltage shunt, current series, and current shunt feedback amplifiers with discrete components and their analysis (05 Hrs)</p> <p><b>Oscillators:</b> Condition for oscillations. RC-phase shift oscillators with Transistor and FET, Hartley and Colpitts oscillators, Wein bridge oscillator, Crystal oscillators, Frequency and amplitude stability of oscillators. (05 Hrs)</p>	<b>CO5</b>

### Textbooks

1. Jacob Millman and Halkias , ' Integrated Electronics', Tata-McGraw Hill International.
2. Donald A. Neaman," Semiconductor Physics and Devices", Times Mirror High Education Group, Chicago.

### Reference books

1. Robert L. Boylestead and Louis Nashelsky,"Electronic Devices and Circuit Theory", Pearson Education.
2. Adel S. Sedra and Kenneth C. Smith, "Microelectronic Circuits", Oxford University Press.
3. D. Chattopadhyay and P.C. Rakshit Electronics: Fundamentals and Applications

### e- Resources & other digital material

1. <https://nptel.ac.in/courses/117/102/117102061/>
2. <https://nptel.ac.in/courses/117/106/117106091/>
3. <https://nptel.ac.in/courses/108/107/108107142/>

**DIGITAL LOGIC DESIGN (CSE, IT, AID, AIM, CIC, CSM, and CSO)**

Unit	Contents	Mapped CO
I	<b>Digital Systems and Binary Numbers (10 hrs)</b> Digital Systems, Binary Numbers, Octal and Hexadecimal Numbers, Complements of Numbers, Signed Binary Numbers, Arithmetic addition and subtraction, 4-bit codes: BCD, EXCESS 3, alphanumeric codes, 9's complement, 2421, etc.	CO1
II	<b>Concept of Boolean algebra (10 hrs)</b> Basic Theorems and Properties of Boolean algebra, Boolean Functions, Canonical and Standard Forms, Minterms and Maxterms. Gate level Minimization Map Method, Three-Variable K-Map, Four Variable K-Maps. Products of Sum Simplification, Sum of Products Simplification, Don't – Care Conditions, NAND and NOR Implementation, Exclusive-OR Function.	CO2
III	<b>Combinational Logic (10 hrs)</b> Introduction, Analysis Procedure, Binary Adder–Subtractor, Binary Multiplier, Decoders, Encoders, Multiplexers, Demultiplexers, Priority Encoder, Code Converters, Magnitude Comparator, HDL Models of Combinational Circuits. Realization of Switching Functions Using PROM, PAL and PLA.	CO3
IV	<b>Synchronous Sequential Logic (10 hrs)</b> Introduction to Sequential Circuits, Storage Elements: Latches, Flip - Flops, RS- Latch Using NAND and NOR Gates, Truth Tables. RS, JK, T and D Flip Flops, Truth and Excitation Tables, Conversion of Flip Flops.	CO4
V	<b>Registers and Counters (10 hrs)</b> Registers, Shift Registers, Ripple Counters, Synchronous Counters, Ring Counter, Johnson Counter.	CO5
<b>Total</b>		<b>50</b>

**Textbooks**

1. Digital Design, 5/e, M. Morris Mano, Michael D Ciletti, PEA.
2. Fundamentals of Logic Design, 5/e, Roth, Cengage.

**Reference Books**

1. Digital Logic and Computer Design, M. Morris Mano, PEA.
2. Digital Logic Design, Leach, Malvino, Saha, TMH.
3. Modern Digital Electronics, R.P. Jain, TMH.

## BUILDING MATERIALS AND CONSTRUCTION (CIV)

Unit	Contents	
I	<b>Building Materials-I (9 hrs)</b> Properties of building stones – relation to their structural requirements. Classification of stones Stone quarrying – precautions in blasting, Dressing of stone Classification of aggregate Composition of good brick earth, various methods of manufacture of bricks	1  1 1 1 2 1 2
II	<b>Building Materials-II (11 hrs)</b> Characteristics of good tile manufacturing methods, Types of tiles General term in Steel, Manufacturing of steel Uses of steel, Market forms of steel Glass, Manufacturing of Glass Structure – properties of wood Seasoning of timber Classification of various types of woods used in buildings Defects in timber Alternative materials for wood Galvanized Iron, Fiber-reinforced plastics, steel, Aluminum.	1 1 1 1 1 1 1 1 1 1 1
III	<b>Building Materials-III (10 hrs)</b> Various ingredients of lime Constituents of classification of limestone various methods of manufacture of lime. Portland cement Chemical Composition hydration, Setting and Fineness of cement Various types of cement and their properties. Various field and laboratory tests for Cement. Various ingredients of Cement concrete and their importance various tests for concrete.	1 1 1 1 1 2 1 1
IV	<b>Building Components and Masonry (10 hrs)</b> Lintels, Arches, Vaults staircases – Types Different types of floors- Concrete, Mosaic, Terrazzo floors, Pitched, flat and curved Roofs. Lean-to-Roof, Coupled	1 1  1

	Roofs, Trussed roofs King and Queen Post Trusses. RCC Roofs, Madras Terrace and Prefabricated Roofs.	1
	Types of masonry	1
	English and Flemish bonds	2
	Rubble and Ashlar masonry	2
	Cavity and Partition walls.	1
<b>v</b>	<b>Building Services and Finishing (10 hrs)</b>	
	Distribution, Sanitary Lines and Fittings	2
	Ventilators, Functional Requirements	1
	proofing- materials and uses	1
	Plastering, pointing, White washing and distempering	
	Painting – Constituents of a paint	2
	– Types of paints	
	Painting of new/old Wood –	2
	Varnish – Form work and scaffolding.	2
	<b>Total</b>	<b>50</b>

#### **Textbooks**

Building material by S.K. Duggal – New Age International Publishers  
 Engineering Materials By Rangwala, Charotar Publishers  
 Building Construction by B.C.Punmia,  
 ArunK. Jain – Laxmi Publications

## ENGINEERING GRAPHICS AND DESIGN (Common to All)

1	TOPIC	No. of hrs
1	<b>UNIT-1 Introduction to Engineering Drawing &amp; AUTOCAD (9 hrs)</b> Introduction to Engineering Drawing and overview of Conventional tools used. Concepts of Various Engineering curves.	1
2	Introduction of AutoCAD ,Setting Up the Workspace, Preferences, Customization, Snaps, Command Interface Some Common Commands -2D Draw ,Modify Commands	1
3	Select any 3 Experiments Depending on Course 1. Cycloids, 2. Involutes ,3. Gear tooth profile Generation ,4. Circuit Design ,5. Electrical Routing	1
4	Select any 3 Experiments Depending on Course 1. Cycloids, 2. Involutes ,3. Gear tooth profile Generation ,4. Circuit Design ,5. Electrical Routing	1
5	Annotation ,Layers, Block creation & Insertion Properties, Groups ,views ,utilities ,Compare , Palettes , External References	1
6	Annotation ,Layers, Block creation & Insertion Properties, Groups ,views ,utilities ,Compare , Palettes , External References	1
7	Select any 2 Experiments Depending on Course 6. Programming for generating Engineering curves. i. Ellipse ii. Parabola iii. Hyperb 7. Generating of Helix curve-2Hrs,8. Archimedean spiral curve,9. Creation of floor plans,10. Creation of sectional elevation showing foundation to ceiling	1
8	Select any 2 Experiments Depending on Course 6. Programming for generating Engineering curves. i.Ellipse ii.Parabola iii.Hyperb 7. Generating of Helix curve-2Hrs,8. Archimedean spiral curve,9. Creation of floor plans,10. Creation of sectional elevation showing foundation to ceiling	1
9	Some Common Commands -3D Draw ,Modify Commands ,Viewports, Rendering, Parts/assemblies.	1
10	<b>UNIT-2 THEORY OF PROJECTION (11 hrs)</b> Principles of Orthographic Projections-Conventions – Projections of Points	2
11	Projections of Points in various Quadrants and finding	2

	Shortest Distance from XY Line	
12	Projections of Lines Inclined to one plane and inclined to both planes	2
13	Projections of Lines Inclined to one plane and inclined to both planes	2
14	Projections of planes inclined to one plane or inclined to both Planes	2
15	Projections of planes inclined to one plane or inclined to both Planes	1
16	<b>UNIT-3 Projections of Regular Solids (10 hrs)</b> Projections of Solids –with the axis perpendicular to one of the principal planes	2
17	Projections of Solids –with the axis perpendicular to one of the principal planes	2
18	Projections of Solids –with the axis Inclined to one of the principal planes	2
19	Projections of Solids –with the axis Inclined to one of the principal planes	2
20	Projections of Solids –with the axis Inclined to Both the principal planes	1
21	Projections of Solids –with the axis Inclined to Both the principal planes	1
22	<b>UNIT-4 Development of surfaces &amp; sectional orthographic views (10 hrs)</b> Development of surfaces of Right Regular Solids – Prism, Pyramid	2
23	Development of surfaces of Right Regular Solids – Prism, Pyramid	2
24	Development of surfaces of Right Regular Solids – Cylinder and Cone	2
25	Development of surfaces of Right Regular Solids – Cylinder and Cone	2
26	Draw the sectional orthographic views of geometrical solids	1
27	Draw the sectional orthographic views of geometrical solids	1
28	<b>UNIT-5 Isometric Projections</b> Conversion of isometric views to orthographic views	2
29	Conversion of isometric views to orthographic views	2
30	Drawing of isometric views - simple Solids	2
31	Drawing of isometric views - simple Solids	2
32	Conversion of orthographic views to isometric views of simple Drawings	1

33	Conversion of orthographic views to isometric views of simple Drawings	1
	<b>Total</b>	<b>50</b>

### **Textbooks**

1. Engineering Drawing by N.D. Butt, Chariot Publications
2. Engineering Drawing + AutoCAD – K Venugopal, V. Prabhu Raja, New Age
3. Engineering Drawing by Agarwal & Agarwal, Tata McGraw Hill Publishers

### **REFERENCE BOOKS**

1. Engineering Drawing by K. L. Narayana & P. Kannaiah, Scitech Publishers
2. Engineering Graphics for Degree by K.C. John, PHI Publishers
3. Engineering Graphics by PI Varghese, McGraw Hill Publishers
4. AutoCAD 2018 Training Guide RUPA PUBLICATIONS (English, Paperback, Sagar Linkan) ISBN: 9789386551870, 938655187X

### **Web resources**

1. <https://www.autodesk.com.au/campaigns/autocad-tutorials>
2. <https://nptel.ac.in/courses/112104172>

## MATERIALS SCIENCE (MEC)

Lecture No	Topics	Reference Books
<b>Unit-1 Structure of Metals and Constitution of alloys (10 hrs)</b>		
1	Bonds in Solids	TI
2	crystallization of metals	TI, T2
3	Grains and Grain Boundaries, crystal defects	TI
5	Effect of grain size on the properties	TI
6	Determination of grain size by different methods	TI, T2
7	Constitution of Alloys: Necessity of alloying	TI
8	Types of solid solutions	TI
9	Hume - Rothery rules	TI
10	Intermediate alloy phases, electron compounds	TI, T2
<b>Unit-2 Phase Diagrams (10 hrs)</b>		
12	Introduction, phase diagrams	TI, T2
13	Construction and interpretation	TI
14	Phase rule	TI, T2
15	Phase rule contd.	TI
16	Lever rule	TI
17	Binary phase Diagrams	TI
18	Binary phase Diagrams contd.	TI
19	Isomorphous transformations with examples	TI, T2
20	Eutectic transformations with examples	TI
21	Eutectoid transformations with examples	TI, T2
22	Isomorphous, Eutectic and Eutectoid transformations	TI, T2
<b>Unit-3 Engineering Materials – I STEELS (10 hrs)</b>		
24	Introduction	TI, T2
25	Steels	TI
26	Iron-Carbon Phase Diagram	TI, T2
27	Heat Treatment	TI
28	Study of Fe-Fe <sub>3</sub> C phase diagram.	TI
29	Construction of TTT diagrams	TI
32	Annealing, Normalizing	TI
33	Hardening and Tempering of steels	TI, T2
34	Hardenability, Alloy steels.	TI
<b>Unit-4 Engineering Materials –II: CAST IRONS &amp; Engineering Materials-III: Non-ferrous Metals and Alloys (10 hrs)</b>		
36	Introduction - Cast Irons	TI
37	Structure and properties of White Cast iron	TI, T2
38	Structure and properties of Malleable Cast iron,	TI
41	Structure and properties of Grey cast iron.	TI, T2

42	Engineering Materials-III	TI
43	Non-ferrous Metals and Alloys	TI, T2
44	Structure and properties of copper and its alloys	TI
46	Aluminium and its alloys	TI
47	Al-Cu phase diagram	TI
48	Titanium and its alloys	TI
<b>Unit-5 Engineering Materials –IV (10 hrs)</b>		
50	Introduction to Engineering Materials	TI, T2
51	Ceramics, Polymers	TI
52	Composites	TI, T2
54	Crystalline ceramics structure, properties & applications	TI
55	Glasses, cermets structure, properties & applications	TI
56	Classification, properties & applications of composites.	TI
58	Classification of Polymers.	TI
59	Properties of Polymers.	TI, T2
60	Applications of Polymers.	TI
<b>Total Number of Classes</b>		<b>50</b>

#### **Textbook**

1. Material Science and Metallurgy/ Kodgire
2. Essentials of Materials Science and engineering / Donald R.Askeland / Thomson.

#### **Reference Books**

1. Elements of Material science / V. Rahghavan
2. Engineering Material and Metallurgy – Er Amandeep Singh Wadhva
3. Materials Science and engineering / William and callister.

**PRACTICAL COURSES**  
**Humanities and Social Sciences Courses**

**COMMUNICATIVE ENGLISH LAB**

**Introduction to Sound system of English**

Articulation - Airstream mechanism, Manners of Articulation, Places of Articulation, English phonetic symbols.

Accent - Syllabification, word stress and accent, stress rules and stress shift, exceptions to rules.

Intonation - Stress and accent in connected speech. Types and functions of Intonation in English.

Pair work, Role play, conversational practice and Individual speaking activities based on following essays from *University of Success*.

1. "How to Fashion Your Own Brand of Success" by Howard Whitman
2. "How to Recognize Your Failure Symptoms" by Dorthea Brande
3. "How to Conquer the Ten Most Common Causes of Failure" by Lois Binstock
4. "How to Develop Your Strength to Seize Opportunities" by Maxwell Maltz
5. "How to Make the Most of Your Abilities" by Kenneth Hildebrand
6. "How to Raise Your Self-Esteem and Develop Self-Confidence" by James W. Newman
7. "How to Win Your War Against Negative Feelings" by Dr Maxwell Maltz
8. "How to Find the Courage to Take Risks" by Tom Rust and Randy Reed
9. "How to Become a Self-Motivator" by Charles T Jones
10. "How to Eliminate Your Bad Habits" by Benjamin Franklin

## Basic Sciences Courses

### ENGINEERING/APPLIED PHYSICS LAB

#### Any Ten of the Listed Fifteen Experiments

##### List of Experiments

1. Determination of wavelength of a source-Diffraction Grating-Normal incidence.
2. Newton's rings – Radius of Curvature of Plano - Convex Lens.
3. Determination of thickness of a spacer using wedge film and parallel interference fringes.
4. Magnetic field along the axis of a current carrying coil – Stewart and Gee's apparatus.
5. Energy Band gap of a Semiconductor p - n junction.
6. Characteristics of Thermistor – Temperature Coefficients
7. Determination of dielectric constant by charging and discharging method
8. LCR Series resonance circuit.
9. Study the variation of B versus H by magnetizing the magnetic material (B-H curve).
10. LASER - Determination of wavelength by plane diffraction grating
11. Determine the radius of gyration using compound pendulum
12. Rigidity modulus of material by wire-dynamic method (torsional pendulum)
13. Dispersive power of diffraction grating.
14. Determination of Hall voltage and Hall coefficients of a given semiconductor using Hall Effect.
15. Verification of laws of vibrations in stretched strings – Sonometer. **(CIV and MEC Branch)**
16. Determination of resistivity of semiconductor by Four probe method. **(All Branches Except CIV & MEC)**

#### ADDITIONAL EXPERIMENTS BEYOND THE SYLLABUS

##### CIV and MEC Branch

- a. Planck's constant
- b. To determine the numerical aperture of a given optical fiber and to find its acceptance angle.

##### All Branches Except CIV & MEC Branches

1. Verification of laws of vibrations in stretched strings – Sonometer.
2. To determine the numerical aperture of a given optical fiber and to find its acceptance angle.

## **ENGINEERING/APPLIED PHYSICS - VIRTUAL LAB – ASSIGNMENTS**

### **Any Three of the Listed Twelve Experiments**

#### **List of Experiments**

1. Hall Effect
2. Crystal Structure
3. Brewster's angle
4. Numerical Aperture of Optical fiber
5. Photoelectric Effect
6. LASER – Beam Divergence and Spot size
7. Michelson's interferometer
8. Black body radiation
9. Flywheel –moment of inertia
10. AC Sonometer
11. Resistivity by four probe method
12. Newton's rings –Refractive index of liquid

***URL: [www.vlab.co.in](http://www.vlab.co.in)***

**ENGINEERING/APPLIED CHEMISTRY LAB**  
**Choice of any Ten out of Sixteen Experiments Listed**  
**List of Experiments**

<b>Sl.No.</b>	<b>Title of the experiment</b>
1	Introduction to chemistry laboratory- Molarity, Normality, Primary, Secondary standard solutions, Volumetric titrations, Quantitative analysis, Qualitative analysis etc.
2	Determination of HCl using standard $\text{Na}_2\text{CO}_3$ solution
3	Determination of Mn (VII) using standard oxalic acid solution
4	Determination of Copper (II) using standard EDTA solution
5	Determination of hardness of water using standard EDTA solution
6	Determination of Iron (III) by colorimetric method
7	Determination of pH
8	Determination of concentration of strong acid vs strong base (by conductometric method)
9	Determination of strong acid vs strong base (by potentiometric method)
10	Estimation of vitamin- C
11	Preparation of Nylon-6, 6
12	Preparation of Bakelite
13	Determination of the concentration of acetic acid using sodium hydroxide (pH-metric method)
14	Determination of alkalinity of a sample containing $\text{Na}_2\text{CO}_3$ and NaOH
15	Determination of ferrous iron using standard $\text{K}_2\text{Cr}_2\text{O}_7$ solution
<b>NOTE: Choice of any 10 experiments from the above</b>	
<b>Experiments beyond the syllabus</b>	
16	Determination of Copper (II) by using HYPO
17	Determination of Zinc by using Potassium ferrocyanide
18	Estimation of vitamin- C in soft drinks / tablets

**Reference Books**

*A Text Book of Quantitative Analysis*, Arthur J. Vogel.

# Engineering Sciences Courses

## PROBLEM SOLVING USING C LAB

### List of Experiments

#### Exercise - 1 Control Flow - I

- a) Write a C Program to Find Whether the Given Year is a Leap Year or not.
- b) Write a C Program to find second biggest of three numbers (Assume that all the numbers are unique).

#### Exercise – 2 Control Flow - II

- b) Write a C Program to Find Whether the Given Number is
  - i) Prime Number
  - ii) Armstrong Number

#### Exercise – 3 Control Flow - III

- a) Write a C program to print Floyd Triangle
- b) Write a C Program to print Pascal Triangle
- c) Write a C program to display a Pyramid

#### Exercise – 4 Arrays - Demonstration of arrays

- a) Search-Linear.
- b) Sorting-Bubble
- c) Operations on Matrix.- Add, Subtract, Multiply

#### Exercise – 5 Strings

- Implementation of string manipulation operations **with** library function: Copy, length, compare
- Implementation of string manipulation operations **without** library function: copy, length, compare

#### Exercise – 6 Functions

- a) Write a C Program demonstrating of parameter passing in Functions and returning values.
- b) Write a C Program illustrating Fibonacci, Factorial with Recursion without Recursion

#### Exercise – 7 Functions - Continued

Write a C Program to compute the values of  $\sin x$  and  $\cos x$  and  $e^x$  values using Series expansion. (Use factorial function)

#### Exercise - 8 Arrays, Strings and Pointers

- a) Write a C Program to find min and max of an array of elements using pointers
- b) Write a C Program to concatenate one string to another using pointer.

#### Exercise – 9 Dynamic Memory Allocations

Write a C program to represent 1D and 2D arrays using malloc () function.

#### Exercises - 10 Structures

- a) Write a C Program to Store Information of a Movie Using Structure
- b) Write a C Program to sort a set of student records in ascending order.
- c) Write a C Program to Add, subtract & multiply Two Complex Numbers.

**Exercise -11 Files**

- a) Write a C programming code to open a file and to print its contents on screen.
- b) Write a C program to copy the content of one file to another.
- C) Write a C program merges two files and stores their contents in another file.

## PROBLEM SOLVING USING PYTHON LAB

### List of Experiments

- 1) Write a program that asks the user for a weight in kilograms and converts it to pounds. There are 2.2 pounds in a kilogram.
- 2) Write a program that asks the user to enter three numbers (use three separate input statements). Create variables called total and average that hold the sum and average of the three numbers and print out the values of total and average.
- 3) Write a program that uses a for loop to print the numbers 8, 11, 14, 17, 20, . . . , 83, 86,89
- 4) Write a program that asks the user for their name and how many times to print it. The program should print out the user's name the specified number of times.
- 5) Use a for loop to print a triangle like the one below. Allow the user to specify how high the triangle should be.

```
*  
**  
***  
****
```

- 6) Generate a random number between 1 and 10. Ask the user to guess the number and print a message based on whether they get it right or not.
- 7) Write a program that asks the user for two numbers and prints Close if the numbers are within .001 of each other and Not close otherwise.
- 8) Write a program that asks the user to enter a word and prints out whether that word contains any vowels.
- 9) Write a program that asks the user to enter two strings of the same length. The program should then check to see if the strings are of the same length. If they are not, the program should print an appropriate message and exit. If they are of the same length, the program should alternate the characters of the two strings. For example, if the user enters abcde and ABCDE the program should print out AaBbCcDdEe. Write a program that asks the user for a large integer and inserts commas into it according to the standard American convention for commas in large numbers. For instance, if the user enters 1000000, the output should be 1,000,000.
- 10) In algebraic expressions, the symbol for multiplication is often left out, as in  $3x+4y$  or  $3(x+5)$ . Computers prefer those expressions to include the multiplication symbol, like  $3*x+4*y$  or  $3*(x+5)$ . Write a program that asks the user for an algebraic expression and then inserts multiplication symbols where appropriate.
- 11) Write a program that generates a list of 20 random numbers between 1 and 100.
  - (a) Print the list.

- (b) Print the average of the elements in the list.
- (c) Print the largest and smallest values in the list.
- (d) Print the second largest and second smallest entries in the list
- (e) Print how many even numbers are in the list.
- 12) Write a program that asks the user for an integer and creates a list that consists of the factors of that integer.
- 13) Write a program that generates 100 random integers that are either 0 or 1. Then find the longest run of zeros, the largest number of zeros in a row. For instance, the longest run of zeros in [1,0,1,1,0,0,0,1,0,0] is 4.
- 14) Write a program that removes any repeated items from a list so that each item appears at most once. For instance, the list [1,1,2,3,4,3,0] would become [1,2,3,4,0].
- 15) Write a program that asks the user to enter a length in feet. The program should then give the user the option to convert from feet into inches, yards, miles, millimeters, centimeters, meters, or kilometers. Say if the user enters a 1, then the program converts to inches, if they enter a 2, then the program converts to yards, etc. While this can be done with if statements, it is much shorter with lists and it is also easier to add new conversions if you use lists.
- 16) Write a function called `sum_digits` that is given an integer `num` and returns the sum of the digits of `num`.
- 17) Write a function called `first_diff` that is given two strings and returns the first location in which the strings differ. If the strings are identical, it should return -1.
- 18) Write a function called `number_of_factors` that takes an integer and returns how many factors the number has.
- 19) Write a function called `is_sorted` that is given a list and returns True if the list is sorted and False otherwise.
- 20) Write a function called `root` that is given a number `x` and an integer `n` and returns  $x^{1/n}$ . In the function definition, set the default value of `n` to 2.
- 21) Write a function called `primes` that is given a number `n` and returns a list of the first `n` primes. Let the default value of `n` be 100.
- 22) Write a function called `merge` that takes two already sorted lists of possibly different lengths, and merges them into a single sorted list.
  - (a) Do this using the `sort` method. (b) Do this without using the `sort` method.
- 23) Write a program that asks the user for a word and finds all the smaller words that can be made from the letters of that word. The number of occurrences of a letter in a smaller word can't exceed the number of occurrences of the letter in the user's word.
- 24) Write a program that reads a file consisting of email addresses, each on its own line. Your program should print out a string consisting of those email addresses separated by semicolons.

- 25) Write a program that reads a list of temperatures from a file called temps.txt, converts those temperatures to Fahrenheit, and writes the results to a file called ftemps.txt.
- 26) Write a class called Product. The class should have fields called name, amount, and price, holding the product's name, the number of items of that product in stock, and the regular price of the product. There should be a method get\_price that receives the number of items to be bought and returns a the cost of buying that many items, where the regular price is charged for orders of less than 10 items, a 10% discount is applied for orders of between 10 and 99 items, and a 20% discount is applied for orders of 100 or more items. There should also be a method called make purchase that receives the number of items to be bought and decreases amount by that much.
- 27) Write a class called Time whose only field is a time in seconds. It should have a method called convert\_to\_minutes that returns a string of minutes and seconds formatted as in the following example: if seconds is 230, the method should return '5:50'. It should also have a method called convert\_to\_hours that returns a string of hours, minutes, and seconds formatted analogously to the previous method.
- 28) Write a class called Converter. The user will pass a length and a unit when declaring an object from the class—for example, `c = Converter(9,'inches')`. The possible units are inches, feet, yards, miles, kilometers, meters, centimeters, and millimeters. For each of these units there should be a method that returns the length converted into those units. For example, using the Converter object created above, the user could call `c.feet()` and should get 0.75 as the result.
- 29) Write a Python class to implement `pow(x, n)`.
- 30) Write a Python class to reverse a string word by word.
- 31) Write a program that opens a file dialog that allows you to select a text file. The program then displays the contents of the file in a textbox.
- 32) Write a program to demonstrate Try/except/else.
- 33) Write a program to demonstrate try/finally and with/as.

## **BASIC ELECTRICAL ENGINEERING LAB (ECE)**

### **List of experiments**

1. State and prove super position theorem for a given T-network.
2. Verification of Thevenin's and Norton Theorems.
3. Series Resonance of RLC circuit.
4. Verification of Maximum power transfer theorem.
5. To determine the performance characteristics of a Shunt Motor.
6. To determine speed control of DC Shunt Motor.
7. To determine the load characteristics of a Shunt Generator.
8. Magnetizing characteristics of DC Shunt Generator.

9. OC & SC on Single phase Transformer.
10. To determine the performance characteristics of three phase induction Motor.

**BASIC ELECTRICAL AND ELECTRONICS ENGINEERING LAB  
(CSE, IT, AID, CIC, CSM, and CSO)**

**List of Experiments:**

**Cycle-1**

1. Verification of Kirchhoff laws.
2. Verification of Voltage division rule and current division rule.
3. Speed control of DC Shunt Motor.
4. Perform Brake test on DC Shunt Motor.
5. Conduct Swinburne's test on DC Shunt Motor.
6. Brake test on 3-phase Induction Motor.

**Cycle-2**

1. V-I characteristics of P-N Junction Diode.
2. Understand Zener Diode Characteristics.
3. Understand Half wave rectifier and Full wave rectifier with and without filter.
4. Characteristics of BJT in Common Base Configuration.
5. Characteristics of BJT in Common Emitter Configuration.
6. Zener diode as voltage regulator.

## **BASIC ELECTRICAL AND ELECTRONICS ENGINEERING LAB (CIV & MEC)**

### **List of Experiments**

1. Verification of Kirchhoff laws.
2. Verification of Voltage division rule and current division rule.
3. Speed control of DC Shunt Motor.
4. Brake test on DC Shunt Motor.
5. Swinburne's test on DC Shunt Motor.
6. Brake test on 1-phase Induction Motor.
7. Brake test on 3-phase Induction Motor.
8. Determination of transformation ratio of 1-phase Induction Motor.
9. Determination of V-I characteristics of P-N Junction Diode.
10. Half wave rectifier and Full wave rectifier operations.
11. Determination of Input and Output characteristics of BJT (CE Configuration).
12. BJT-CE Amplifier

## BASIC ELECTRONIC DEVICES AND CIRCUITS LABORATORY (EEE)

### Electronic Workshop Practice

1. Identification, Specifications and Testing of active devices, Diodes, BJTs, JFETs, LEDs, LCDs, SCR, UJT.
2. Soldering Practice- Simple circuits using active and passive components.
3. Study and operation of Ammeters, Voltmeters, Transformers, Analog and Digital Millimeter, Function
4. Regulated Power Supply and CRO.

### List of Experiments

Any 10 of the following experiments are to be conducted

1. P.N Junction Diode Characteristics
  - Part A: Germanium Diode (Forward bias & Reverse bias)
  - Part B: Silicon Diode (Forward Bias only)
2. Zener Diode Characteristics
  - Part A: V-I Characteristic
  - Part B: Zener Diode as Voltage Regulator
3. Rectifiers (without and with c-filter)
  - Part A: Half-wave Rectifier
  - Part B : Full-wave Rectifier
4. BJT Characteristics (CE Configuration)
  - Part A: Input Characteristics
  - Part B: output Characteristics
5. FET Characteristics
  - Part A: Drain Characteristics
  - Part B: Transfer Characteristics
6. BJT Biasing
7. FET Biasing
8. CRO Operation and its Measurement
9. Design of CE Amplifier
10. Frequency response of CE Amplifier
11. Design any oscillator and measure frequency of oscillation (RC PHASE SHIFT, WEIN BRIDGE)
12. Design any oscillator and measure frequency (HARTLEY, and COLPITT'S)
13. Design of variable DC power supply (application).

**COMPUTER ENGINEERING WORKSHOP**  
(Common to CSE, IT, AID, AIM, CIC, CSM, and CSO)

S.NO	TOPIC NAME	NO. OF HOURS	TEXTBOOK & REFERENCE
<b>Unit-1</b>			
1	<b>Introduction:</b> Simple Computer Systems, Hardware and Software Concepts including identifying peripherals of a computer, components in a CPU and its functions.	2	T1 & R2
2	The process of assembling a personal computer and installation of system software like MS Windows, Linux and the required device drivers.	2	T1 & R2
3	Hardware and software level troubleshooting process including tips and tricks.	2	T1 & R2
4	Assemble and disassemble the PC back to working condition	1	T1 & R2
<b>Number of classes</b>		<b>7</b>	
<b>UNIT-2</b>			
5	Algorithm / Pseudo code development	2	T1
6	Flowchart with description	2	T1
7	The one-zero games, some structured programming concepts, documents.	2	T2
8	Programming Languages: Machine, assembly, high level and low-level languages, Assemblers, Compilers, and Interpreters.	2	T2
9	Productivity tool: LaTeX and Microsoft (MS) office	2	T2
<b>Number of classes</b>		<b>10</b>	
<b>UNIT-3</b>			
10	Introduction and Evolution of operating systems	2	T3 & R2
11	Command Interpreter, Popular operating systems- Microsoft DOS, Microsoft Windows, UNIX and Linux.	2	T3 & R2
12	Introduction to Unix Shell Commands and directory management commands	2	T3 & R2
13	File operations, users' commands, Time and Date commands.	2	T3 & R2

	<b>Number of classes</b>	<b>8</b>	
<b>UNIT-4</b>			
14	Introduction to computer Networks. Network topologies-Bus topology, star topology, Ring topology, Mesh topology, Hybrid topology.	2	T1 & R1
15	Types of Networks	1	T1 & R1
16	Network Devices	1	T1 & R1
17	Basic Networking Commands	2	T1 & R1
18	Dynamic memory management functions	2	T1 & R1
19	command line arguments	2	T1 & R1
	<b>Number of classes</b>	<b>10</b>	
<b>UNIT-5</b>			
20	Introduction to HTML: Basic HTML tags,	2	T4 & R1
21	Basics in Web Design and Brief History of Internet, creating a web site, Web Browsers and Surfing the Web	2	T4 & R1
22	Elements of HTML	2	T4 & R1
23	Cyber Hygiene	1	T3 & R1
	<b>Number of classes</b>	<b>07</b>	
<b>Total number of classes</b>		<b>42</b>	

### Textbooks

1. Fundamentals of Computers –Reema Thareja-Oxford higher education
2. Computer Fundamentals, Anita Goel, Pearson Education, 2017
3. PC Hardware Trouble Shooting Made Easy, TMH
4. Programming the World Wide Web, 7th Edition, Robet W Sebesta, Pearson, 2013.

### Reference Books

1. An Introduction to Web Design, Programming, 1st Edition, Paul S Wang, Sanda S Katila, Cengage Learning, 2003.
2. An Introduction to Computer studies –Noel Kalicharan-Cambridge

## **WORKSHOP PRACTICE LAB (MEC only)**

### List of Experiments

#### **Wood Working**

Familiarity with different types of woods and tools used in wood working and make following joints

- a) Half – Lap joint
- b) Dovetail joint
- c) Bridle joint

#### **Sheet Metal Working**

Familiarity with different types of tools used in sheet metal working, Developments of following sheet metal job from GI sheets

- a) Tapered tray
- b) Conical funnel
- c) Elbow pipe
- d) Brazing

#### **Fitting**

Familiarity with different types of tools used in fitting and do the following fitting exercises

- a) V-fit
- b) Dovetail fit
- c) square fit
- d) Semi-circular fit
- e) Two-Wheeler tyre puncture and change of two wheeler tyre

#### **Electrical Wiring**

Familiarities with different types of basic electrical circuits and make the following connections

- a) Parallel and series
- b) Two-way switch
- c) Godown lighting
- d) Tube light
- e) Three phase motors
- f) Soldering of wires

## **Civil Engineering Workshop Practice (CIV only)**

### List of Experiments

#### **Carpentry**

1. Half-lap joint: Join two wooden blocks with the help of half-lap joint.
2. Dovetail joint: Join two wooden blocks with the help of dovetail joint.
3. Sawing and finishing: Prepare a plain smooth block (cuboid) of timber of given dimension using sawing and planning operations.

#### **Welding**

1. Fillet welding: Join two given plates at right angle using fillet weld.
2. But welding: Join two given plates using but weld.
3. Spot welding: Lap joint of two thin sheets using resistance spot welding.

#### **House wiring**

1. Parallel and series connection of two bulbs
2. Tube light and fan with regulator wiring
3. Bulb operating with Two-way switch

#### **Masonry**

1. Assemble a L shape brick wall of 0.9 m length and 0.6 m height on each side with 9" and 4.5" thicknesses by arranging bricks in English bond (using only wet mud as mortar). Ensure that wall is in line, plumb and at right angle to a given structure
2. Assemble a T shape brick wall of 1.2 m length and 0.6 m height on each side with 9" and 4.5" thicknesses by arranging bricks in Flemish bond (using only wet mud as mortar). Ensure that wall is in line, plumb and at right angle to a given structure
3. Mark level of given height from ground level at different locations in the workshop using water pipe technique

#### **Plumbing**

1. Identify various supply pipes and pipe fittings (like pipes of different diameter, nipple, reducer, union, T, elbow, tap etc.) used in plumbing.
2. Identify various drain pipes and sanitary fittings (like p-trap, gully trap, etc) used in plumbing.
3. Assemble a pipeline as per given drawing using pipes of one inch diameter, pipes of half inch diameter, nipple, reducer, union, T, elbow, tap etc. (This may involve basic tasks such as marking, cutting, threading, etc and use of appropriate techniques so that water leakage does not occur) and then disassemble this pipeline.

**MANDATORY ZERO CREDIT COURSES  
ENVIRONMENTAL SCIENCE**

S.No	Topic	No. of Lectures
<b>Unit I-Multidisciplinary nature of Environmental Studies</b>		
1	Definition, Scope and Importance Need for Public Awareness.	1
2	<b>NATURAL RESOURCES:</b> Renewable and non-renewable resources Natural resources and associated problems Forest resources – Use and over – exploitation, deforestation, case studies Timber extraction – Mining, dams and other effects on forest and tribal people	1
3	Water resources – Use and over utilization of surface and ground water – Floods, drought, conflicts over water, dams – benefits and problems	1
4	Mineral resources: Use and exploitation, environmental effects of extracting and using mineral resources, case studies Food resources: World food problems, changes caused by agriculture and overgrazing,	1
5	Effects of modern agriculture, fertilizer-pesticide problems, water logging, salinity, case studies. Energy resources	1
<b>UNIT – II: Ecosystems, Biodiversity, and its Conservation</b>		
6	<b>ECOSYSTEMS:</b> Concept of an ecosystem. – Structure and function of an ecosystem – Producers, consumers, and decomposers Energy flow in the ecosystem – Ecological succession – Food chains, food webs and ecological pyramids	1
7	Introduction, types, characteristic features, structure, and function of the following ecosystem: Forest ecosystem. Grassland ecosystem Desert ecosystem, Aquatic ecosystems (ponds, streams, lakes, rivers, oceans, estuaries)	1
8	<b>BIODIVERSITY AND ITS CONSERVATION:</b> Definition: genetic, species and ecosystem diversity Bio-geographical classification of India – Value of biodiversity: consumptive use, Productive use, social, ethical, aesthetic and option values Biodiversity at global, National and local levels – India as a mega-diversity nation	1
9	Hot-spots of biodiversity – Threats to biodiversity: habitat loss, poaching of wildlife, man-wildlife conflicts Endangered and endemic species of India	1
10	Conservation of biodiversity: In-situ and Ex-situ conservation of biodiversity.	1

<b>UNIT – III: Environmental Pollution and Solid Waste Management</b>		
<b>11</b>	<b>ENVIRONMENTAL POLLUTION:</b> Definition, Cause, effects and control measures of: Air Pollution Water pollution, Soil pollution	1
<b>12</b>	Marine pollution, Noise pollution Thermal pollution, nuclear hazards	1
<b>13</b>	<b>SOLID WASTE MANAGEMENT: Causes,</b> effects and control measures of urban and industrial wastes	1
<b>14</b>	Role of an individual in prevention of pollution – Pollution case studies	1
<b>15</b>	Disaster management: floods, earthquake, cyclone and landslides.	1
<b>UNIT – IV: Social Issues and the Environment</b>		
<b>16</b>	<b>SOCIAL ISSUES AND THE ENVIRONMENT:</b> From Unsustainable to Sustainable development Urban problems related to energy – Water conservation, rainwater harvesting, watershed management	1
<b>17</b>	Resettlement and rehabilitation of people; its problems and concerns. Case studies – Environmental ethics: Issues and possible solutions Climate change, global warming, acid rain, ozone layer depletion, nuclear accidents and holocaust. Case Studies	1
<b>18</b>	Wasteland reclamation. – Consumerism and waste products. – Environment Protection Act. Air (Prevention and Control of Pollution) Act	1
<b>19</b>	Water (Prevention and control of Pollution) Act	1
<b>20</b>	Wildlife Protection Act – Forest Conservation Act – Issues involved in enforcement of environmental legislation – Public awareness	1
<b>UNIT – V: Human Population and the Environment</b>		
<b>21</b>	<b>HUMAN POPULATION AND THE ENVIRONMENT:</b> Population growth, variation among nations. Population explosion	1
<b>22</b>	Family Welfare Programmes – Environment and human health	1
<b>23</b>	Human Rights – Value Education – HIV/AIDS – Women and Child Welfare	1
<b>24</b>	Role of information Technology in Environment and human health – Case studies.	1
<b>25</b>	<b>FIELD WORK:</b> Visit to a local area to document environmental assets River/forest grassland/hill/mountain Visit to a local polluted site- Urban/Rural/Industrial/Agricultural Study of common plants, insects, and birds – river, hill slopes, etc.	1

**Textbooks**

1. Textbook of Environmental Studies for Undergraduate Courses by Erach Bharucha for University Grants Commission, Universities Press.
2. Environmental Studies by Palaniswamy – Pearson education
3. Environmental Studies by Dr. S. AzeemUnnisa, Academic Publishing Company

**References**

1. Textbook of Environmental Science by Deeksha Dave and E. Sai Baba Reddy, Cengage Publications.
2. Textbook of Environmental Sciences and Technology by M. Anji Reddy, BS Publication.
3. Comprehensive Environmental studies by J. P. Sharma, Laxmi publications.
4. Environmental sciences and engineering – J. Glynn Henry and Gary W. Heinke – Prentice Hall of India Private limited.
5. A Textbook of Environmental Studies by G. R. Chatwal, Himalaya Publishing House
6. Introduction to Environmental engineering and science by Gilbert M. Masters and Wendell P. Ela - Prentice hall of India Private limited.

## CONSTITUTION OF INDIA

S. No	Topic	No. of Lectures
<b>UNIT-I Introduction to Indian Constitution (5 hrs)</b>		
1	Definition, Scope and Importance	1
2	Constitution' meaning of the term,	1
3	Indian Constitution - Sources and constitutional history,	1
4	Features - Citizenship, Preamble, Fundamental Rights and Duties,	1
5	Directive Principles of State Policy.	1
<b>UNIT-II Union Government and its Administration Structure of the Indian Union (6 hrs)</b>		
6	Federalism, Centre- State relationship	1
7	President: Role, power and position	1
8	PM and Council of ministers	1
9	Cabinet and Central Secretariat	1
10	Lok Sabha, Rajya Sabha	1
11	The Supreme Court and High Court: Powers and Functions	1
<b>UNIT-III State Government and its Administration (3 hrs)</b>		
12	Governor - Role and Position	1
13	CM and Council of ministers	1
14	State Secretariat: Organisation, Structure and Functions	1
<b>UNIT-IV Local Administration ( 6 hrs)</b>		
15	District's Administration Head - Role and Importance	1
16	Municipalities - Mayor and role of Elected Representative CEO of Municipal Corporation	1
17	Pachayati Raj: Function PRI: Zila Panchayat	1
18	CEO Zila Panchayat	1
19	Block level Organizational Hierarchy - (Different departments)	1
20	Village level - Role of Elected and Appointed officials - Importance of grass root democracy	1
<b>UNIT-V Election Commission (5 hrs)</b>		
21	Election Commission- Role of Chief Election Commissioner and Election Commissionerate	2
22	State Election Commission	2
23	Functions of Commissions for the welfare of SC/ST/OBC and women	1
<b>Total</b>		<b>25</b>

## References

1. Durga Das Basu, Introduction to the Constitution of India, Prentice – Hall of India Pvt. Ltd. New Delhi
2. Subash Kashyap, Indian Constitution, National Book Trust
3. J.A. Siwach, Dynamics of Indian Government & Politics
4. D.C. Gupta, Indian Government and Politics
5. H.M. Sreevai, Constitutional Law of India, 4th edition in 3 volumes (Universal Law Publication)
6. J.C. Johari, Indian Government and Politics Hans
7. J. Raj Indian Government and Politics
8. M.V. Pylee, Indian Constitution Durga Das Basu, Human Rights in Constitutional Law, Prentice – Hall of India Pvt. Ltd.. New Delhi
9. Noorani, A.G., (South Asia Human Rights Documentation Centre), Challenges to Civil Right), Challenges to Civil Rights Guarantees in India, Oxford University Press 2012

## E-RESOURCES

1. [nptel.ac.in/courses/109104074/8](http://nptel.ac.in/courses/109104074/8)
2. [nptel.ac.in/courses/109104045/](http://nptel.ac.in/courses/109104045/)
3. [nptel.ac.in/courses/101104065/](http://nptel.ac.in/courses/101104065/)
4. [www.hss.iitb.ac.in/en/lecture-details](http://www.hss.iitb.ac.in/en/lecture-details)
5. [www.iitb.ac.in/en/event/2nd-lecture-institute-lecture-series-indian-constitution](http://www.iitb.ac.in/en/event/2nd-lecture-institute-lecture-series-indian-constitution)

**MANDATORY LIFE SKILLS /EMPLOYABILITY SKILLS COURSES**

**Employability Skills-1**  
**Syllabus for 1<sup>st</sup> Year 1<sup>st</sup> Semester**

<b>Module-1 Verbal Ability</b>	<b>No. of Hours</b>
<b>Induction / Introduction</b> Career Guidance; Importance of Employ-Ability Skills with reference to career development. <b>Competitive vocabulary building skills–practice of previous test series.</b> <u>TALK TANK</u> <b>JAM Session / Stage fear reduction</b> Just-A-Minute session by speaking on various situation/s without any preparation so that the fear of making errors can be subdued and simultaneous enhancement of self-confidence. <b>Free Speech / Impromptu</b> Topics on social issues / Controversial topics / Opinion / Situations / Case scenarios.	10
<b>Module-2 Quantitative &amp; Reasoning Abilities</b> Number System LCM & HCF Series Analogy Classification	20
<b>Module-3 Verbal Ability</b> <b>Subject &amp; Verb Agreement (SVA) / Concord</b> Rules of SVA; Exercises on assorted rules. Functional grammar moderate Practice of previous competitive test series	08
<b>Module-4 Quantitative &amp; Reasoning Abilities</b> Fractions and Decimals Ratio, Proportion, and Variation Coding and Decoding Counting Figures	16

**Employability Skills-2**  
**Syllabus for 1<sup>st</sup> Year 2<sup>nd</sup> Semester**

<b>Module-1 Verbal Ability</b>	<b>No. of Hours</b>
<b>Conditionals</b> ('If clauses) – Structures which are not common. <b>Text &amp; Sentence completion</b> Practice of slip tests	09
<b>Module-2 Quantitative &amp; Reasoning Abilities</b>	20
Percentages Non-Verbal Reasoning	
<b>Module-3 Verbal Ability</b>	09
<b>Basic communication skills</b> Interactive sessions to enhance language proficiency <b>Role-Plays / Activity Based Learning</b> Role-plays- buzz group activities- case studies reflections- situations / scenarios etc.	
<b>Module-4 Quantitative &amp; Reasoning Abilities</b>	16
Simple and Compound Interest Algebraic Equations Finding Missing Terms Arrangement	

To make the students **attend** the classes regularly from the first day of starting of classes and be aware of the **University regulations and Autonomous Institute's**, the following Undertaking Form is introduced which should be signed by both **student and parent**. The same should be submitted to the **HOD** concerned on the day of commencement of semester classes.

### ***Undertaking by Students & Parent/Guardian***

I, Mr/Miss \_\_\_\_\_ bearing Regd No \_\_\_\_\_  
Son/Daughter/Ward of \_\_\_\_\_ joining I /II semester of I / II / III  
/ IV year for the academic year **2018-19** in Vasireddy Venkatadri Institute of  
Technology, Nambur, Guntur do hereby undertake and abide by the following  
terms. I will bring the **ACKNOWLEDGEMENT** provided below duly signed by me  
and my parent/guardian on \_\_\_\_\_  
\_\_\_\_\_ the re- opening day of the College.

1. I will **attend** all the classes from the **re-opening day** of the College as per the Academic Calendar, failing which I will be warned and permitted to attend classes by the Department if I report within the first week. In case, I do not turn up even after one week, I shall be **ineligible** to continue for the current academic year.
2. I will not come **late** to the college or leave the college **early** without proper permission from the HoD and Principal.
3. I am aware that the college is under **electronic surveillance** and the attendance will be recorded in **BYNDR** software. The absentee statement will be posted through **SMS** to the parents every day.
4. I will be regular and punctual to all the classes (theory/practical/drawing) and secure attendance of **not less than 75%** in each subject as stipulated by JNTUK. I am fully aware that attendance **less than 75% in any of the subjects I will be detained for that semester.**
5. I will follow the mandatory **dress code and uniform** prescribed by the college.
6. I will conduct myself in a highly **disciplined** and **decent** manner both inside the classroom and on the campus, failing which suitable action may be taken against me as per the rules and regulations of the College.
7. I will not get involved in **any disputes** with my fellow students during my course of study and also will not cause **any damage** to the institute's property.
8. I will concentrate on my **studies** without wasting time on the Campus / in Hostel/Residence and attend all the **tests** to secure more than the

minimum prescribed Class / Sectional Marks in each subject. I will submit the given **assignments** in time to improve my performance.

9. I will not get involved in any **malpractice** in **any** examination.
10. I am aware that if I fail in more subjects (and have more back logs) I will attend **Remedial Classes** and will be closely monitored by the assigned mentor.
11. I am aware that **use of cell phones**, cameras, i-Pods, MP3 Players or any other electronic gadgets in the buses and college premises is strictly **prohibited**. I will not bring **Cell Phones or any other electronic gadgets** to the College campus
12. I will not involve in any form of **ragging** inside or outside the campus. I am fully aware that bringing mobile phone to the campus and involving in Ragging is an **offence** and punishable as per JNTUK rules /Law.
13. I will **pay** my tuition fees, examination fees and any other **dues** within the stipulated time as required by the Institute authorities failing which I will not be permitted to attend the classes.
14. I am fully aware that using **tobacco products, consuming alcohol and other addictive substances or found inebriated** on campus, I will **forfeit** my admission and criminal action will be initiate as per the law.
15. I will **not cause or get involved** in any sort of **violence or disturbance** both within and outside the college campus.
16. If I **absent continuously for 3 classes**, my **parents** will have to meet the concerned/Principal.

..... Please tear here and submit to the HoD.....

### **ACKNOWLEDGEMENT**

I, Mr/Miss \_\_\_\_\_ bearing Regd.No \_\_\_\_\_  
\_\_\_\_\_ Son/Daughter  
/Ward of Sri/Smt \_\_\_\_\_ have gone through carefully the terms of the above undertaking and understand that following these are for my/his/her own benefit and improvement. I also understand that if I/he/she fail to comply with these terms, will be liable to suitable action as per college/university rules and law. I undertake that I/he/she will strictly follow the above terms.

Signature of Student

Name:

Roll. No.:

Mobile Number

Signature of Parent/Guardian

Name:

Address:

Mobile Number:

**HELP LINES****ADMINISTRATION**

S.No.	Name	Designation	Contact No
1	Dr. Y Mallikarjuna Reddy	Principal	9949359336
2	Dr YVSSSV Prasad	Director	9866302148
3	Dr. R Naveen	Director (CoE)	9849637666
4	Dr. N Kumara Swamy	Dean of Administration	9490386288
5	Dr K Giri Babu	Dean of Academics	9885263148
6	Dr M V Raghu Ram	Dean, Freshman	9848985998
7	Dr. P Ammi Reddy	Controller of Examinations	9848068948
8	Mr. N. Siva Rama Krishna	Deputy Controller of Exams	9121214715
9	Dr. K Pavan Kumar	Additional Controller of Exams	9866433588
10	Mr. NV Sai Krishna	Librarian	9866821123
11	Mr. J Koteswara Sarma	Administrative Officer	9866384336
12	Mr. D Srinivas	Senior Assistant (Office)	9951023336
13	Mr. N Kalyan Srinivas	Junior Assistant (Admissions)	9849542336

**HEADS OF THE DEPARTMENTS**

14	Dr. T Vijaya Krishna	Sciences and Humanities	9490743400
15	Dr. Bh Rajyalakshmi	Sciences and Humanities	9959084828
16	Dr. T Sreedhar Babu	Civil Engineering	9490772244
17	Dr. A Naresh Babu	EEE	9849509478
18	Dr. K Satyanarayana	Mechanical Engineering	9440484851
19	Dr. M Y Bhanu Murthy	ECE	9704135453
20	Dr. V Ramachandra Bhat	CSE	9441410285
21	Dr. A Kalavathi	Information Technology	9440201567
22	Dr. Ch V Suresh	CIC (CS Internet of Things)	9989254335
23	Dr. MRN Tagore	CSO (CS IoT and Cyber Security with Block Chain Technology)	99866179668
24	Dr Kolluru Suresh	CSM (CS Artificial Intelligence & Machine Learning) AIM (Artificial Intelligence & Machine Learning)	9949929525
25	Dr T Sudheer	AID (Artificial Intelligence & Data Science)	9849700724
26	Dr Karayil Suresh Babu	TPO	9490750007

**ANTI-RAGGING AND STUDENT GRIEVANCE COMMITTEE**

27	Dr. T Sreedhar Babu	Coordinator	9490772244
28	Circle-Inspector of Police	Members	9440796265
29	Sub-Inspector of Police, Pedakakani PS		

<b>OFFICIALS ON IMPORTANT COMMITTEES</b>			
30	Mr. A Sudarshan Reddy	Discipline Committee	9703555935
31	Mr. P V S M Kumar	Transportation	9491185052
32	Mr. G Chandra Mohan	Transportation-In-charge	9949030604
33	Mr. A V Subba Rao	Canteen-In-charge	9949023336
34	Dr. Bh Rajyalakshmi	Warden, Ladies Hostel	9959084828
35	Ms. B Lalitha	Resident Warden & Caretaker Ladies Hostel	9492083926
37	Dr. R Ratna Prasad	Warden, Boys Hostel	9490114986
38	Mr. K Srinivasa Rao	Asst. Warden, Boys Hostel	9885609615
39	Dr. A Srivani	Lieutenant, NCC Girls Bn	9908890119
40	Mr. S Beeban Basha	Captain, NCC Boys Bn	9866371472
41	Dr. I L J Bhakta Singh	NSS Officer	6300601402
42	Dr. Y Mallikarjuna Reddy	PIO, RTI Act	9949359336
44	Dr. M V Raghuram	APIO, RTI Act	9848985998
45	Mr N Ashok	Training Officer	9866789752
46	Ms J Geetha Lalitha Singh	IUCEE-NEP Mini Courses for First Year	9848068142
<b>STUDENT MENTORING &amp; COUNSELING</b>			
47	Dr. J Vijaya Kumar	Professor, S&H (First Year)	9490750413
48	Dr. V Ramachandran	HoD, CSE (II, III & IV Years)	9441410285
49	Dr. K Manikeswara Rao	Medical Officer	9866377188
<b>SPORTS AND GAMES</b>			
50	Dr. N Arun Kumar	Physical Director	9848594048
51	Dr. M Giridhar	Physical Director	9160663333
<b>STUDENTS ACTIVITIES CELL</b>			
52	Mr K L Gowtham	Presidential Council	9390623990
53	Ms P Sravya Lakshmi		8897562515
54	Mr KVS Giridhar		8309268064
55	Ms N Mounika		8309120752

Students can mail to

1. **Presidential Council-** sac@vvit.net
2. **Discipline Council-** discipline@vvit.net
3. **Student Welfare Council-** studentfeedback@vvit.net

**LIST OF CLASSTEACHERS FOR I B. TECH I SEMESTER -- AY 2022-23**

Class teachers are also student mentors and counsellors.  
There is one faculty mentor/counsellors for every 22 students.  
Students will be informed individually.

S. No.	Branch	Class Teachers	Contact No
1	CIV	Sri. Y. Madhusudhana Rao	9440792690
2	EEE-A	Dr. A Srivani	9908890119
3	EEE-B	Sri. K Sambasiva Rao	8008169296
4	EEE-C	New Faculty (Math)	
5	MEC	Sri. K. Veera Reddy	9441604464
6	ECE-A	Sri. VTY. Kumar	9494094041
7	ECE-B	Smt. R Madhavi Latha	9441237440
8	ECE-C	Dr. K. Pavan Kumar	9866433588
9	INF-A	Dr. T. Madhu Mohan	9949678092
10	INF-B	Dr. Bhasu Nirmal	
11	INF-C	Smt. B Padmasree	9440766062
12	CSE-A	Sri. T. Suresh	9293149567
13	CSE-B	Smt. J Geetha Lalitha	9848068142
14	CSE-C	Sri. B S K Chaitanya	9885654364
15	CSE-D	New Faculty – 1 (Chemistry)	
16	CSM-A	Sri. G Rama Subba Rao	9908677014
17	CSM-B	Dr. J Vijaya Kumar	9490750413
18	CSM-C	Dr. T L M V Subba Rao	9908681475
19	CIC-A	Smt. K Lalitha	8790310880
20	CIC-B	Smt. J. Krishna Priya	9885082119
21	CSO	New Faculty – 2 (Chemistry)	
22	AID-A	Sri. BJ. Frederick	9959575808
23	AID-B	Sri. M V Ramanjaneyelu	9885763723
24	AID-C	Mr. P. Suneel Kumar	8639707335
25	AIM	Sri. N Praveen Kumar	8341839092
26			
27			

**LIST OF FACULTY HANDLING FIRST YEAR B. TECH CLASSES -- AY 2022-23**

**DEPARTMENT OF SCIENCES AND HUMANITIES**

S.No	Name of the Faculty	Designation	email	Mobile
<b>Communicative English</b>				
1	Dr. MV Raghuram	Prof & Dean	mv.raghuram@vvit.net	8500450220
2	Dr. Bh Rajya Lakshmi	Prof & HoD	govind7bimineni@yahoo.co.in	9959084828
3	Dr. P Anuradha	Professor	anuradhasudheer@gmail.com	9989448015
4	Dr. K Pavan Kumar	Assoc. Prof	pkolaganti@gmail.com	9866433588
5	Mr. K Samba Siva Rao	Assoc. Prof	ksambasivarao1106@vvit.net	8008169296
6	Mrs. B Padma Sree	Asst. Prof	padmasree002@gmail.com	9440766062
7	Mr BJC Frederick	Asst. Prof	redfoxfred@gmail.com	9959575808
8	Mr Y MadhusudhanRao	Asst. Prof	yadlapallimadhu49@gmail.com	9440792690
<b>Applied/Engineering Physics</b>				
9	Dr. T. Vijaya Krishna	Prof & HoD	tvijayakrishnavvit@gmail.com	9490743400
10	Dr. T Madhu Mohan	Professor	tmadhumohan@gmail.com	9949678092
11	Dr. A Srivani	Assoc. Prof	allasrivani@gmail.com	9908890119
12	Mr. K Veera Reddy	Asst Prof	veerakantam73@gmail.com	9441604464
13	Mr. VTY. Kumar	Asst Prof	vytkumar@gmail.com	9494094041
14	Mr. N. Praveen Kumar	Asst Prof	kumar.namburu@gmail.com	9491583563
15	Mr. P. Suneel Kumar	Asst Prof	surya220880@gmail.com	8639707335
<b>Applied/Engineering Chemistry</b>				
16	Dr. TLMV Subba Rao	Prof, HoD i/c	subbarao.tlmv@gmail.com	9908681475
17	Dr. T Suresh	Asst. Prof	thuta.suresh@gmail.com	9293149567
18	Ms. K Lalitha	Asst. Prof	kamarasulalitha@gmail.com	8790310880
19	New Faculty			
20	New Faculty			
21	Ms J Krishna Priya	Asst Prof	kp1390@gmail.com	9885082119
<b>Mathematics</b>				
22	Dr. J Vijay Kumar	Prof, HoD i/c	vyotvij@yahoo.com	9490750413
23	Dr. C Nagaratnamaiah	Professor	carugundla123@yahoo.co.in	9441404449
24	Dr. N Koteswaramma	Professor	keerthimedha@gmail.com	9440070412
25	Dr. Ch Ram Prasad	Assoc. Prof	rm.prasad3@gmail.com	8019399557
26	Dr P Prasannanjaneyulu	Assoc Prof	prauni1977@gmail.com	9949089034
27	Dr Bhasu Nirmal	Assoc Prof	devabn1234@vvit.net	9849664775
28	Dr Renuka Lakshmi	Assoc. Prof	renukalakshmiavvari@vvit.net	9100764835
29	Mr. N Siva Rama Krishna	Assoc. Prof	rknandiraju@gmail.com	9849048992
30	Mr.Sd Beeban Basha	Asst. Prof	syedbeeban@gmail.com	9866371472
31	Mrs. M Sunitha Bharathi	Asst. Prof	Suniabharathi20@gmail.com	9346712159
32	Mr. B S K Chaitanya	Asst. Prof	ichaitanyabsk@gmail.com	9885654364
33	Mr. K Rama Kishore	Asst. Prof	kvrk14@gmail.com	9966826836
34	Mrs. R Madhavi Latha	Asst. Prof	madhavilatharavinuthala@gmail.com	9441237440
35	Mr M V Ramanjaneylu	Asst Prof	mutyam.09@gmail.com	9885763723
36	Mr. K. Balachandra Prasad	Asst. Prof	kbcprasad@gmail.com	9441650255
37	New Faculty			
<b>Environmental Studies</b>				
38	Mr. G Rama Subba Rao	Asst. Prof	grsubrao@gmail.com	9908677014
39	Ms. Geetha Lalitha Singh	Asst. Prof	gljsingh@gmail.com	9848068142
<b>ENGINEERING &amp; OTHER DEPARTMENTS – I semester Only</b>				
<b>Mechanical Engineering</b>				
40	Mr. PVS Mohan Kumar	Assoc. Prof	surendra1966@rediffmail.com	9030106532

41	Dr. P Nageswara Rao	Asst. Prof	vvitpnr@gmail.com	9949001586
42	Mrs ML Vinitha	Asst Prof	lakshmi_vinitha@vvit.net	8985836827
43	Mr B. Aditya Pavan	Asst Prof	basa_aditya@vvit.net	9885213476
44	Mr. M. Avinash	Asst Prof	avinashm@vvit.net	9440491371
45	Mr. K. Madhusudhan	Asst Prof	madhusudhan- msckoneru@vvit.net	9989395826
<b>CSE &amp; INF</b>				
46	Dr. O. Aruna	Assoc. Prof	arunasri52@gmail.com	9440826853
47	Mr. A Vishnu Vardhan	Assoc. Prof	vishnuvardhan.299@gmail.com	7386368215
48	Mr. M. China Pentu Saheb	Asst. Prof	saheb10thjune@gmail.com	9494547090
49	Mr. Ch. Vijayananda Ratnam	Asst. Prof	cvr.511@gmail.com	8008429015
50	Mr. K. Bala Krishna	Asst. Prof	bk.kancheria@vvit.net	9502479009
51	Mrs. K. Sandhya Rani	Asst. Prof	sandhyakodali.vvit@gmail.com	9885420222
52	Mr. K Jeevan Ratnakar	Asst. Prof	jeevanratnakarvvit@gmail.com	9052608588
53	Mr. N. Ashok Kumar	Asst. Prof	Ashok.nanduri@vvit.net	9550206296
54	Mr. K. Parisuddha Babu	Asst. Prof	kpbabu@vvit.net	9866160461
<b>EEE</b>				
55	Dr Ch. V. Suresh	Prof	venkatasuresh3@gmail.com	9989254335
56	Dr. D Srilatha	Prof	srilatha.dande@gmail.com	9502728191
57	Dr ILJ Bhaktha Singh	Assoc. Prof	iljbakhtsingh@gmail.com	6300601402
58	Dr Ch. Naga Sai Kalyan	Asst. Prof	kalyanchallapalli@gmail.com	8885811784
59	Mr. B. Srinivasa Raju	Asst. Prof	eee.rahu@gmail.com	8978039318
60	Mr. A. Naveen Reddy	Asst. Prof	naveenreddy2021@gmail.com	7731040947
<b>LIFE SKILLS/EMPLOYABILITY SKILLS</b>				
61	Dr Karayil Suresh Babu	Assoc Prof	karayilsuresh@vvit.net	9490750007
62	Dr U Madhavaiah	Assoc Prof	madhavpst@vvit.net	8019714018
63	Ms K Kiranmayi	Asst Prof	kiranmayi@vvit.net	9848560001
64	Mr B Eswarnath Rathod	Asst Prof	rathod@vvit.net	6301353968
65	Mr Poorna Chandra Rao	Asst Prof	purnachandrarao@vvit.net	9966735649
<b>BEEE LAB</b>				
66	Dr P Lakshman Naik	Assoc Prof	Lakshman.help1@gmail.com	9908505982
67	Mr Sk Rasulullah	Assoc Prof	Vvit.gn.eee@gmail.com	9346780325
68	Ms G Sravani	Asst Prof	sravanigorikapudi@gmail.com	7093876228
69	Ms K Baby Shamili	Asst Prof	shamilikuraganti210@gmail.com	9010422540
70	Mr T Swamy das	Asst Prof	swamydas.t@gmail.com	8341280245
71	Mr T Ramalingaiah	Asst Prof	ramupe.222@gmail.com	8500849026
72	Ms A Sai Anusha	Asst Prof	saianushaalla@gmail.com	8341689725
<b>Problem Solving using C Lab / Computer Workshop</b>				
73	Mr Sayeed	Asst Prof	mdsyeed25@gmail.com	7416152261
74	Mr RBD Prasad	Asst Prof	rdurgasivaprasadr@gmail.com	8688426050
75	Ms Seema Anjum	Asst Prof	seemaanjum1261@gmail.com	7793903633
76	Ms Salma Sultana	Asst Prof	sultana.anas@gmail.com	7893782320
77				
78				
79				
80				

## STUDENT'S PROFILE

Name of the Student: \_\_\_\_\_

Regd. No.: 22BQ1A \_\_\_\_\_ Branch/Sec: \_\_\_\_\_ Bus Route: \_\_\_\_\_

Name of the Class Teacher: \_\_\_\_\_

Name of the Counsellor: \_\_\_\_\_

Father's Name: \_\_\_\_\_ Mother's Name: \_\_\_\_\_

Date of Birth: \_\_\_\_\_ Reservation category, if any: \_\_\_\_\_

Telephone No. of Parent: \_\_\_\_\_ Mobile: \_\_\_\_\_

E-mail-ID: \_\_\_\_\_ Blood Group: \_\_\_\_\_

Parent's Occupation: \_\_\_\_\_ Parent's Annual Income: \_\_\_\_\_

Scholarship if any (EBC, Minority, SC, St, BC etc.): \_\_\_\_\_

Academics (GPA): SSC: \_\_\_\_\_ Inter: \_\_\_\_\_ EAMCET (rank): \_\_\_\_\_

Any other Achievements: \_\_\_\_\_

NSS / NCC - A/B/C (if any): \_\_\_\_\_ Hobbies: \_\_\_\_\_

Extra-Curricular Activities: \_\_\_\_\_

Clubs in which interested: \_\_\_\_\_

Career option: PG / Job or any other: \_\_\_\_\_

Past Health Record: \_\_\_\_\_

Address for communication: \_\_\_\_\_

Permanent Address: (if different from above): \_\_\_\_\_

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