VASIREDDY VENKATADRI INSTITUTE OF TECHNOLOGY

AUTONOMOUS

FIRST YEAR
STUDENT HANDBOOK
ACADEMIC YEAR: 2020-21

Namburu, Pedakakani (Mandal), Guntur (Dist.)– 522508
Website: 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 - MEC, ECE, CSE, CIV, EEE & INF Programs
Accredited By NBA
Nodal Centre of APSSDC
SIEMENS Centre of Excellence
Google Code Lab
Dassault 3D Experience Lab

VVIT
VASIREDDY VENKATADRI INSTITUTE OF TECHNOLOGY

FIRST YEAR
STUDENT HANDBOOK
ACADEMIC YEAR: 2020-21

Namburu, Pedakakani (Mandal), Guntur (Dist.)– 522508
Website: WWW.VVITGUNTUR.COM
email: vvitn@rediffmail.com; 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 studious 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 during their study at the institution.

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

Motor Cycles: 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.

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.**

Uniformfor 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 class room 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 on the topics/subjects of their interest

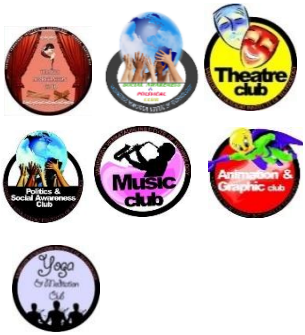
Activities

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 Volley Ball, Basket Ball, Tennicoit, 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, 36 Km walk on National Youth Day (12 January), 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.

1. Do no litter the college premises with food wrappers. Do not dispose them off the classroom windows. Use dustbins.
2. Follow decorum while eating in the canteen. Make way for others to purchase from the counters. Do not crowd at the canteen.
3. While eating in the classrooms take care not to spill food on the desks and floor.
4. Do not wash your hands with mineral water at the Mineral Water Dispensers. Use the wash basins instead.
5. 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 Text Books 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 near Kaza tollgate, the Girls hostel is on college campus.

Transport

i. A fleet of **87** buses operate in different directions from Guntur, Mangalagiri, Amaravati, Ponnur, Tenali, Chilakaluripet, Perecherla, Pedanandipadu, Kollipara and Vijayawada.
ii. Students should use college transportation only.

iii. Students have to 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.

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 apart from curriculam. 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 helpto 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. DassaultSystemes, 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. **Soft Skills**: All students are trained in Soft Skills, Analytical Reasoning, Quantitative Aptitude and Functional English. Emphasis is on spoken English and Communication Skills. Comprehensive training will be given in Skill Oriented Courses as per curriculum.
3. **CRT(Campus Recruitment Training)**: Training in employability skills like quantitative aptitude, logical and analytical reasoning, verbal proficiency, etc. is given to the students from First Year onwards.

Students are given company specific placement training with Customized Modules as per the requirements of the recruiting companies.

4. **Technical Courses**: Programming in C, C++, Java, Python are taught to all students, while industry oriented branch specific courses like Advanced Java courses, SQL, .NET, Asp, AUTOCAD etc. are offered to the students.
5. **Certifications**: Certification programmes like NPTEL courses, NX Software, ROBOTICS, CATIA, DELMIA, SIMULIA etc. are offered to students.

6. **GATE, GRE/TOEFL/IELTS**: Students who wish to pursue Higher Education in India or abroad are offered and guide in preparing for those examinations in their Final Year.
7. **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.

Our students are recruited by the following companies


GENPACT
Global Business Impact™


WIPRO
Applying Thought


Praneeth
G R O U P


VEE TECHNOLOGIES USA
Extraordinary Outcomes


TIBCO
The Power of Now™


PORTWARE


EMC²


RPOHIRE


Infosys®
POWERED BY INTELLECT
DRIVEN BY VALUES


TATA
TATA CONSULTANCY SERVICES
Experience certainty.


eider
motors


Cummins


Essae®
...for Excellence


HGS
HINDUJA GLOBAL SOLUTIONS


HCL


GOOD
THROUGH


SUTHERLAND
GLOBAL SERVICES


ADITYA BIRLA GROUP


MIRACLE MSS
SOFTWARE SYSTEMS, INC.


PAXTERRA
SOLUTIONS
Committed to Excellence


IT
trailblazers
One Source. Global Proficiency


DELL


ATLAS
SYSTEMS
Library Excellence Through Efficiency


Knoah
Responsive, Innovative and
Award-Winning Outsourcing Services


CSS
CORP


Since:1985
eBtronics®
To provide insight for enhancing wealth


GlobalLogic
athenahealth


Quality
People


SIEMENS


DV
TECHNOLOGIES


SEMANTICSPACE
TECHNOLOGIES


L-CUBE
TECHNOLOGIES


CN WATER SYSTEMS
A BWT PARTNER


GlobalLogic


HSBC


apps associates
extreme expertise


Honeywell


DATALAB
INDIA


indus
TOWERS


ITC Limited


HYUNDAI


VEM
ignited minds... for you


CADeploy Engineering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FSS
POWERING
PAYMENTS


Technovert


Technovert


Mu Sigma


NALSOFT


O.C.TANNER


echnovert


Technovert


Triveni
TURBINES


Capgemini
CONSULTING.TECHNOLOGY.OUTSOURCING


SYNTEL
Consider IT Done®


Our Milestones

Year	Achievements
2013	Increase of intake from 120 to 180 in B. Tech ECE and CSE programmes.
2014	Increase of intake from 60 to 120 and 180 to 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 (APSSDC)
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 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 throughAPSSDC, 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.
2017	Sanction of DST projects and FDPs worth INR 1 Crore Increase of intake from 60 to 180 in B.Tech IT programme. MoU with North eastern University to setup venture development Centre. Agrement to setup Google Code lab with Google Inc., USA through APSSDC Recognised Research Centre in ECE dept by JNTUK
2018	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 from 120 to 180 in B.Tech EEE & Mechanical 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
2019	VVIT becomes an Autonomous institution.
2020	AICTE has sanctioned four New B. Tech Programmes in emerging areas-AI&DS (AID)-60, CSE -AI&ML (CSM)- 60, CSE-IOT (CSO)-60, CSE-IOT&CS including BT (CIC)-60 Top rated Private Engineering College by Times Engineering Rankings 2020. Ranked among the top 25 institutes in the Country by ARIIA Ranking 2020

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 PM.**
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

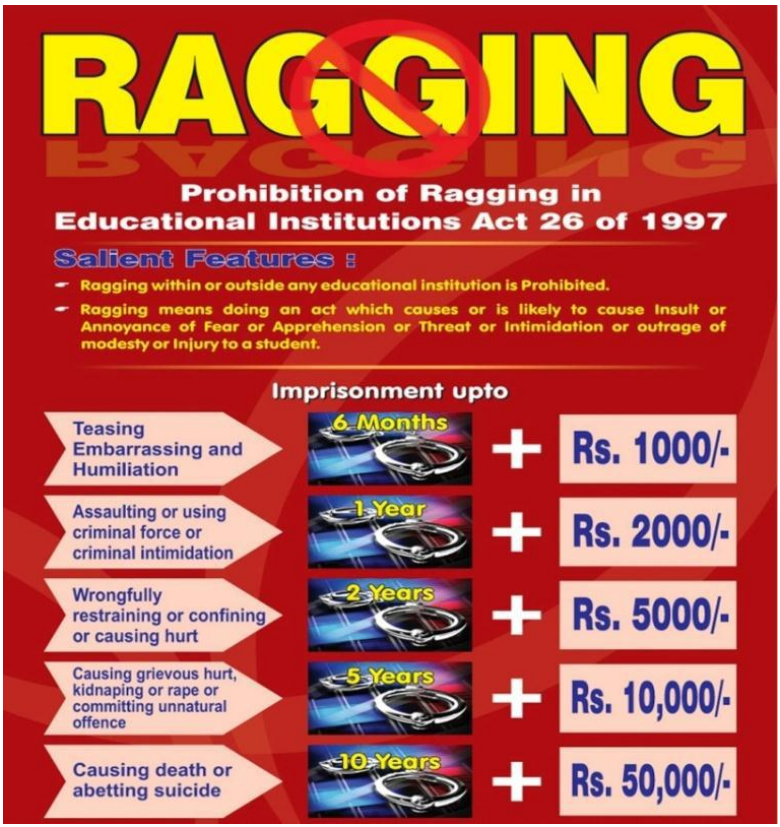
Let us make VVIT

A Ragging Free Campus

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.**



Academic Calendar 2020-21

Orientation: Student Induction Programme: 6 Jan – 12 Jan, 2021

B. Tech I Year I Semester

Description	From	To	Weeks
I Unit of Instruction	06-01-2021	20-02-2021	7w
I Mid Examinations	15-02-2021	20-02-2021	1w
II Unit of Instruction	22-02-2021	10-04-2021	7w
II Mid Examinations	05-04-2021	10-04-2021	1w
Preparation and Practical Examinations	12-04-2021	14-04-2021	1w
Semester End Examinations	19-04-2021	01-05-2021	2w

B. Tech I Year II Semester

Description	From	To	Weeks
Commencement of Class work			
I Unit of Instruction	03-05-2021	19-06-2021	7w
I Mid Examinations	14-06-2021	19-06-2021	1w
II Unit of Instruction	21-06-2021	31-07-2021	7w
II Mid Examinations	26-07-2021	31-07-2021	1w
Preparation and Practical Examinations	02-08-2021	07-08-2021	1w
Semester End Examinations	09-08-2021	21-08-2021	2w

Commencement of II-I Class work: 30-08-2021

List of Holidays

Sankranthi	13, 14, 15 Jan	Sri Rama Navami	21 Apr
Republic Day	26 Jan	Ramzan	14 May
Maha Siva Ratri	11 March	Bakrid	21 July
Holi	29 Mar	Independence Day	15 Aug
Good Friday	02 Apr	Mohharram	19 Aug
BabuJagjivanramJayanthi	05 Apr	Sri Krishnashtami	30 Aug
Ugadi	13 Apr	VinayakaChavithi	10 Sep
Ambedkar'sJayanthi	14 Apr		

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 1st year level and only CATEGORY-A at Lateral Entry 2nd 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
2	Electrical and Electronics Engineering	180	EEE
3	Mechanical Engineering	120	MEC
4	Electronics and Communication Engineering	180	ECE
5	Computer Science and Engineering	240	CSE
6	Information Technology	180	INF
7	Artificial Intelligence and Data Science	60	AID
8	Artificial Intelligence and Machine Learning	60	CSM
9	Internet of Things	60	CSO
10	IOT & Cyber Security including Blockchain Technology	60	CIC

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	Non credit
9	Skill Oriented Courses	10
	Total Credits	**160**

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 on the basis of participation, attendance, performance and behavior. If a student gets an unsatisfactory Grade, he/she shall repeat the above activity in the subsequent years, in order 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 has to 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 has to 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 has to pursue and acquire a certificate for a MOOC course only from the organizations/agencies approved by the BoS in order 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. Under graduate 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.

Guide lines for Internal Assessment (Continuous Evaluation)

During the semester there shall be two internal Mid Examinations.

The weightage of internal marks for **30** is distributed as shown in the following table.

S.No	Type of Exam	Weightage of Marks
1	Descriptive Test	15 Marks
2	Assignment Test (Open Book Exam)	5 Marks
3	Objective Examination	5 Marks
4	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 text books related to that subject. (Soft copies of the text books will not be allowed.) The assignments have to 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

Guide lines 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 x 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 has to 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 or not 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 or not 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	**A+**	Outstanding	10
80 to 89	**A**	Excellent	9
70 to 79	**B**	Very Good	8
60 to 69	**C**	Good	7
50 to 59	**D**	Fair	6
40 to 49	**E**	Satisfactory	5
<40	**F**	Fail	0
ABSENT	**Ab**	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.

$$\mathbf{SGPA = \Sigma (C_i \times G_i) / \Sigma C_i}$$

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

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

i.e. **CGPA = Σ (Ci × Si)/ Σ Ci**

where 'Si' is the SGPA of the ith semester and Ci 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:

Equivalent Percentage = (CGPA – 0.50) x 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*	≥7.5
First Class	≥6.5 &<7.5
Second Class	≥5.5 &<6.5
Pass Class	≥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 entrepreneurships/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 been 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.
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 4thsemester provided that the student must have acquired a minimum of 8.0 SGPA up to the end of 2ndsemester without any backlogs. In case of the declaration of the 3rd semester results after the commencement of the 4thsemester 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 4thsemester 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 2ndsemester without any history of backlogs. It is expected that the 3rd semester results may be announced after the commencement of the 4th semester. If a student fails to acquire 8 SGPA upto 3rdsemester or failed in any of the courses, his registration forMinors program shall stand cancelled. An SGPA of 8 has to 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 forth award of B. Tech degree with Minor. This is in addition to the credits essential for obtaining the Under Graduate 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 has to 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 in to 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 2020-21onwards

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:

Class Awarded	CGPA to be secured
First Class with distinction*	≥7.5
First Class	≥6.5 &<7.5
Second Class	≥5.5 &<6.5
Pass Class	≥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

S. No	Nature of Malpractices/ Improper conduct	Punishment
1. (a)	Possesses or keeps accessible in examination hall, any paper, note book, 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	Expulsion from the examination hall and cancellation of performance in that subject and all the other subjects the

	answer book or additional sheet, during or after the examination.	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 examiners or writes to the examiner requesting him to award pass marks.	Cancellation of the performance in that subject.
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	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.

	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.	
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**
1		Communicative English	3	0	0	3
2		Mathematics-I	3	0	0	3
3		Engineering Physics	3	0	0	3
4		Problem Solving using C	3	0	0	3
5		Engineering Graphics	1	0	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
		Total Credits	**19.5**			

I Year II Semester						
S.No.	**Code**	**Course Name**	**L**	**T**	**P**	**C**
1		Mathematics-II	3	0	0	3
2		Basic Electricals and Electronics Engineering	3	0	0	3
3		Engineering Chemistry	3	0	0	3
4		Building Materials & Construction	3	0	0	3
5		Engineering Mechanics	3	0	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
		Total Credits	**19.5**			

ELECTRICAL AND ELECTRONICS ENGINEERING (EEE)

I Year I Semester						
S.No.	**Code**	**Course Name**	**L**	**T**	**P**	**C**
1		Communicative English	3	0	0	3
2		Mathematics-I	3	0	0	3
3		Engineering Physics	3	0	0	3
4		Problem Solving using C	3	0	0	3
5		Engineering Graphics	1	0	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
		Total Credits	**19.5**			

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

MECHANICAL ENGINEERING

I Year I Semester						
S.No.	**Code**	**Course Name**	**L**	**T**	**P**	**C**
1		Communicative English	3	0	0	3
2		Mathematics-I	3	0	0	3
3		Engineering Physics	3	0	0	3
4		Problem Solving using C	3	0	0	3
5		Engineering Graphics	1	0	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
		Total Credits	**19.5**			

I Year II Semester						
S.No.	**Code**	**Course Name**	**L**	**T**	**P**	**C**
1		Mathematics-II	3	0	0	3
2		Basic Electricals and Electronics Engineering	3	0	0	3
3		Engineering Chemistry	3	0	0	3
4		Computer Aided Advanced Engineering Drawing	1	0	4	3
5		Engineering Mechanics	3	0	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
		Total Credits	**19.5**			

ELECTRONICS AND COMMUNICATION ENGINEERING

I Year I Semester						
S.No.	**Code**	**Course Name**	**L**	**T**	**P**	**C**
1		Communicative English	3	0	0	3
2		Mathematics-I	3	0	0	3
3		Engineering Physics	3	0	0	3
4		Problem Solving using C	3	0	0	3
5		Engineering Graphics	1	0	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
		Total Credits	**19.5**			

I Year II Semester						
S.No.	**Code**	**Course Name**	**L**	**T**	**P**	**C**
1		Mathematics-II	3	0	0	3
2		Basic Electrical Engineering	3	0	0	3
3		Applied Chemistry	3	0	0	3
4		Network Analysis	3	0	0	3
5		Problem Solving using Python	3	0	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
		Total Credits	**19.5**			

ARTIFICIAL INTELLIGENCE & DATA SCIENCE (AID)

I Year I Semester						
S.No.	**Code**	**Course Name**	**L**	**T**	**P**	**C**
1		Mathematics-I	3	0	0	3
2		Applied Chemistry	3	0	0	3
3		Basic Electricals and Electronics Engineering	3	0	0	3
4		Problem Solving using C	3	0	0	3
5		Computer Engineering Workshop	1	0	4	3
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
		Total Credits	**19.5**			

I Year II Semester						
S.No	**Code**	**Course Name**	**L**	**T**	**P**	**C**
1		Communicative English	3	0	0	3
2		Mathematics-II	3	0	0	3
3		Applied Physics	3	0	0	3
4		Problem Solving using Python	3	0	0	3
5		Digital Logic Design	3	0	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	2	0	0	0
		Total Credits	**19.5**			

COMPUTER SCIENCE AND ENGINEERING (CSE)

I Year I Semester						
S.No.	**Code**	**Course Name**	**L**	**T**	**P**	**C**
1		Mathematics-I	3	0	0	3
2		Applied Chemistry	3	0	0	3
3		Basic Electricals and Electronics Engineering	3	0	0	3
4		Problem Solving using C	3	0	0	3
5		Computer Engineering Workshop	1	0	4	3
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
		Total Credits	**19.5**			

I Year II Semester						
S.No	**Code**	**Course Name**	**L**	**T**	**P**	**C**
1		Communicative English	3	0	0	3
2		Mathematics-II	3	0	0	3
3		Applied Physics	3	0	0	3
4		Problem Solving using Python	3	0	0	3
5		Digital Logic Design	3	0	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	2	0	0	0
		Total Credits	**19.5**			

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	0	0	3
2		Applied Chemistry	3	0	0	3
3		Basic Electricals and Electronics Engineering	3	0	0	3
4		Problem Solving using C	3	0	0	3
5		Computer Engineering Workshop	1	0	4	3
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
		Total Credits	**19.5**			

I Year II Semester						
S.No	**Code**	**Course Name**	**L**	**T**	**P**	**C**
1		Communicative English	3	0	0	3
2		Mathematics-II	3	0	0	3
3		Applied Physics	3	0	0	3
4		Problem Solving using Python	3	0	0	3
5		Digital Logic Design	3	0	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	2	0	0	0
		Total Credits	**19.5**			

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	0	0	3
2		Applied Chemistry	3	0	0	3
3		Basic Electricals and Electronics Engineering	3	0	0	3
4		Problem Solving using C	3	0	0	3
5		Computer Engineering Workshop	1	0	4	3
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
		Total Credits	**19.5**			

I Year II Semester						
S.No	**Code**	**Course Name**	**L**	**T**	**P**	**C**
1		Communicative English	3	0	0	3
2		Mathematics-II	3	0	0	3
3		Applied Physics	3	0	0	3
4		Problem Solving using Python	3	0	0	3
5		Digital Logic Design	3	0	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	2	0	0	0
		Total Credits	**19.5**			

COMPUTER SCIENCE AND ENGINEERING - IoT and Cyber Security including Blockchain Technology (CIC)

I Year I Semester						
S.No.	**Code**	**Course Name**	**L**	**T**	**P**	**C**
1		Mathematics-I	3	0	0	3
2		Applied Chemistry	3	0	0	3
3		Basic Electricals and Electronics Engineering	3	0	0	3
4		Problem Solving using C	3	0	0	3
5		Computer Engineering Workshop	1	0	4	3
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
		Total Credits	**19.5**			

I Year II Semester						
S.No	**Code**	**Course Name**	**L**	**T**	**P**	**C**
1		Communicative English	3	0	0	3
2		Mathematics-II	3	0	0	3
3		Applied Physics	3	0	0	3
4		Problem Solving using Python	3	0	0	3
5		Digital Logic Design	3	0	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	2	0	0	0
		Total Credits	**19.5**			

INFORMATION TECHNOLOGY (IT)

I Year I Semester						
S.No.	**Code**	**Course Name**	**L**	**T**	**P**	**C**
1		Mathematics-I	3	0	0	3
2		Applied Chemistry	3	0	0	3
3		Basic Electricals and Electronics Engineering	3	0	0	3
4		Problem Solving using C	3	0	0	3
5		Computer Engineering Workshop	1	0	4	3
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
		Total Credits	**19.5**			

I Year II Semester						
S.No	**Code**	**Course Name**	**L**	**T**	**P**	**C**
1		Communicative English	3	0	0	3
2		Mathematics-II	3	0	0	3
3		Applied Physics	3	0	0	3
4		Problem Solving using Python	3	0	0	3
5		Digital Logic Design	3	0	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	2	0	0	0
		Total Credits	**19.5**			

LECTURE PLANS
Humanities and Social Sciences Courses
COMMUNICATIVE ENGLISH

S. No	Topic	No. of Lectures
Unit-I A Proposal to Girdle the Earth (Excerpt) by Nellie Bly **Theme: Exploration (12 hrs)**		
1	Introduction	1
2	Reading Comprehension: Skimming for main ideas; scanning for specific pieces of information.	2
3	Writing: Paragraphs, beginnings, introducing the topic, key words, main idea	2
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	2
5	"How to Fashion Your Own Brand of Success" by Howard Whitman	2
6	"How to Recognize Your Failure Symptoms" by Dorthea Brand	2
7	Revision/Seminars	1
Unit-II An excerpt from The District School As It Was by One Who Went to It by Warren BurtonTheme: On Campus (11 hrs)		
8	Reading Comprehension: Identifying sequence of ideas, recognizing verbal techniques that help link the ideas in a paragraph	2
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	2
10	Grammar and Vocabulary: Cohesive devices-linkers, sign posts and transition signals use of articles and zero articles, prepositions	2
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
Unit-III The Future of Work? Theme: Working Together (11 hrs)		
15	Reading Comprehension: Reading a text in detail by making	2

	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	2
17	Grammar and Vocabulary: Verbs-tenses; subject-verb agreement; direct and indirect speech, reporting verbs for academic purposes	2
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
Unit-IV H.G Wells and the Uncertainties of Progress by Peter J. Bowler Theme: Fabric of Change (12 hrs)		
21	Reading Comprehension: Understand and interpret graphic elements used in texts (convey information, reveal trends/patterns/relationships, communicate processes or display data)	2
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
Unit-V Leaves from the Mental Portfolio of a Eurasian by Sui Sin Far Theme: Tools for Life (10 hrs)		
27	Reading for comprehension: Exercises	1
28	Writing: Writing structured essays on specific topics using suitable claims and evidences	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 OgMandino	2
32	Revision/Seminars	1
33	Consolidation of Learning in classroom and language lab	4
	Total	**60**

Text Books

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
UNIT-I Differential Equations of First Order and First Degree (12hrs)		
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	2
8.	Orthogonal trajectories	2
9.	Electrical circuits	1
UNIT-II Linear Differential Equations of Higher Order (14hrs)		
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 $x^{m}V(x)$	2
16.	Method of variation of parameters	2
17.	LCR circuits	2
18.	Simple harmonic motion	2
UNIT-III Mean Value Theorems (10hrs)		
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
UNIT-IV Partial Differentiation (12hrs)		
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	2
30.	Maxima and minima of function of two variables with constraints (Lagrange's Method)	2
UNIT-V Multiple Integrals (12hrs)		
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	2
36.	Volumes by triple integrals	2
	Total Hours	**60**

Text Books

1. B. S. Grewal,*Higher Engineering Mathematics*, 44th Edition, Khanna Publishers.

MATHEMATICS – II

S. No	Topic	No. of Lectures
UNIT-I Iterative Methods (10hrs)		
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
UNIT-II Interpolation (12hrs)		
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	2
16.	Gauss backward interpolation formula	2
17.	Lagrange's interpolation formula	1
18.	Newton's divide difference formula	1
UNIT-III Numerical Integration and Solution of Ordinary Differential Equations (10hrs)		
19.	Trapezoidal rule	1
20.	Simpson's $1/3^{rd}$ and $3/8^{th}$ 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
UNIT-IV Laplace Transforms (14hrs)		
26.	Laplace transforms of standard functions	2
27.	Shifting theorems	2
28.	Laplace transforms of derivatives and integrals	2
29.	Unit step function, Dirac's delta function	1
30.	Periodic function	1
31.	Inverse Laplace transforms	2
32.	Convolution theorem	1

33.	Evaluation of integrals using Laplace transforms	1
34.	Solving of ordinary differential equations using Laplace transforms	2
UNIT-V Fourier Series and Fourier Transforms (14hrs)		
35.	Introduction	1
36.	Fourier series of periodic functions	1
37.	Fourier series of even and odd functions	2
38.	Half-range Fourier sine and cosine series	2
39.	Fourier integral theorem	2
40.	Fourier sine and cosine integrals	2
41.	Fourier sine and cosine transforms	1
42.	Properties of Fourier transforms	1
43.	Inverse Fourier transforms	1
44.	Finite Fourier transforms	1
	Total Hours	**60**

Text Books

2. B. S. Grewal,*Higher Engineering Mathematics*, 44th 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*, 22nd Edition, S. Chand & Company Ltd.
3. Erwin Kreyszig, *Advanced Engineering Mathematics*, 10th Edition, Wiley-India.

APPLIED/ENGINEERING PHYSICS (COMMON TO ALL)

S. No	TOPIC	No. of Hrs.
UNIT-IWAVE OPTICS (12hrs)		
	INTERFERENCE	
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
	DIFFRACTION	
6	Introduction and diffraction of light, Types of diffraction,	1

	Differences between interference and diffraction	
7	Fraunhofer diffraction due to single slitand Intensity distribution curves (quantitative)	1
8	Fraunhofer diffraction due to circular aperture (qualitative)	1
9	Fraunhofer diffraction due to double slit (qualitative)	1
10	Fraunhofer diffraction due to grating (N- slits) (qualitative)	1
11	Grating spectrum and missing orders	1
12	Rayleigh's criterion for resolving power, Resolving power of grating, Telescope and Microscope (all qualitative)	1
UNIT-IILASERS and HOLOGRAPHY (12 hrs)		
	LASERS	
13	Introduction to LASERS, Coherent source, Characteristics of lasers	1
14	Spontaneousand Stimulated emission of radiation	1
15	Populationinversion, Einstein'scoefficients	1
16	Pumping mechanisms	1
17	Rubylaser	1
18	Helium-Neonlaser	1
19	Applications of Lasers	1
	HOLOGRAPHY	
20	Introduction and Principle of holography	1
21	Differences between photography and holography	1
22	Construction and reconstruction of hologram	2
23	Applications of holography	1
UNIT-III MAGNETISM & DIELECTRICS (13 hrs)		
	MAGNETISM	
24	Introduction to Magnetism, Magnetic dipole moment, Magnetization, Magnetic susceptibility and Permeability	1
25	Originofmagneticmoment and Bohr magneton	1
26	Classificationof Magneticmaterials:Dia,ParaandFerro	2
27	Domain concept of Ferromagnetism	1
28	Hysteresis	1
29	Soft and hard magnetic materials, Applications of magnetic materials	1
	DIELECTRICS	
30	Introduction, Dielectric polarization, Dielectric polarizability, susceptibility and Dielectric constant	1
31	Types of polarizations: Electronic (quantitative), ionic	2

	(quantitative) and orientational (qualitative)	
32	Lorentz Internalfield	1
33	Clausius-Mossotti'sequation, Frequency dependence of polarization	1
34	Applications of Dielectrics	1

APPLIEDPHYSICS (Except CIV & MEC)

UNIT-IVQUANTUM MECHANICS (10 hrs)		
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	SchrodingerTimeIndependentwave equation	1
42	SchrodingerTimeDependentwave equation	1
43	Particle inone dimensionalbox (determination of energy)	2
UNIT-VSEMICONDUCTOR PHYSICS (13 hrs)		
44	Introduction and Origin of energy bands (qualitative)	2
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	2
50	Drift and Diffusion	1
51	Einstein's Equation	1
52	Hall Effect, Hall co-efficient and it's applications	2
	TOTAL CLASSES	**60**

ENGINEERING PHYSICS (CIV AND MEC)

S. No	TOPIC	No. of Hrs.
UNIT-IVACOUSTICS & ULTRASONICS (13 hrs)		
	ACOUSTICS	
35	Introduction to acoustics	1
36	Reverberation and Reverberation time	1
37	Sabine's formula	2
38	Absorption coefficient	1

39	Absorption coefficient determination	1
40	Factors affecting acoustics of buildings and their remedies	1
	ULTRASONICS	
41	Introduction and Properties of Ultrasonics	1
42	Production of ultrasonics by Magnetostriction method	1
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
UNIT-VELASTICITY (10 hrs)		
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
	TOTAL CLASSES	**60**

Text Books

1. Pandey, B. K. andChaturvedi, S. *Engineering Physics.*Cengage, 2012.
2. Avadhanulu, M. N. and Kshirsagar, P. G. *A Text book of Engineering Physics.* S. Chand, 2017.
3. Bhattacharya, D. K. and TandonPoonam. *Engineering Physics.* Oxford press, 2015.
4. Gaur, R. K. and Gupta, S. L. *Engineering Physics.*DhanpatRai publishers, 2012.

Reference Books

1. *Engineering Physics* by M. R. Srinivasan, New Age international publishers, 2009.
2. *Optics* by AjoyGhatak, 6th 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
UNIT-IPOLYMER TECHNOLOGY(14hrs)		
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	1
5	Fabrication (compression, injection, blown film, extrusion)	2
6	Preparation,properties and applications of PVC, ploycarbonates and Bakelite	2
7	Mention some examples of plastic materials used in electronic gadgets ,recycling of e-plastic waste.	1
8	***Elastomers***- Natural rubberDrawbacks,Vulcanization	1
9	Preparation-Properties and applications of synthetic rubbers (Buna S, thiokol and polyurethanes)	1
10	***Composite Materials***- Fiber reinforced plastics-CFRP and GFRP	1
11	***Conducting polymers*** - Polyacetylene, doped conducting polymers -p-type and n-type doping	1
12	***Bio degradable polymers -*** Biopolymers and biomedical polymers	1
UNIT-II ELECTROCHEMICAL CELLS AND CORROSION (12hrs)		
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	2
17	Fuel cells- H_2 –O_2, CH_3OH-O_2	1
18	Phosphoric acid, molten carbonate fuel cells	1
19	***Corrosion***-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 control: (proper designing, cathodic protection) protective coatings: cathodic and anodic coatings	1
23	Electroplating, electroless plating (nickel), paints (constituents and its functions)	1

APPLIED CHEMISTRY(Except CIV & MEC)

S. No.	Topic	No. of Lectures
UNIT-III MATERIAL CHEMISTRY (12 hrs)		
24	***Non-elemental semiconducting materails*** - Stoichiometric, controlled valency & chalcogen photo/semiconductors	2
25	Preparation of semiconductors-distillation, zone refining, Czochralski crystal pulling technique	2
26	Semiconductor devices -p-n junction diode as rectifier, junction transistor	1
27	***Insulators & magnetic materials***- Electrical insulators, ferro and ferri magnetism-Hall effect and its application	1
28	***Nano materials***- Introduction, sol-gel method	1
29	Preparation of carbon nanomaterials by carbon-arc, laser abalation methods	1
30	Types,applications of graphene-carbon nanotubes and fullerenes	1
31	Characterization by BET, SEM and TEM methods	1
32	***Liquid crystals***- Introduction-types-applications.	1
33	***Superconductors-***Meissner effect, type- I and type-II super conductors, characteristics and applications.	1
UNIT-IV ADVANCED CONCEPTS AND GREEEN CHEMISTRY (10 HRS)		
34	***Molecular switches and machines***- 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	***Green chemistry-*** Principles of green chemistry	1

41	Green synthesis – aqueous phase, microwave assisted chemical reactions and phase transfer catalysis (PTC)	2
UNIT-V SPECTROSCOPIC TECHNIQUES & NON-CONVENTIONAL ENERGY SOURCES (12 HRS)		
42	***Spectroscopic Techniques***-Electromagneticspectrum-types of molecular spectra and their absorption criteria	1
43	***UV***-visible spectroscopy (electronic spectroscopy), Frank-Condon principle, Beer-Lambert's law and its limitations	2
44	Chromophores and auxochromes – applications of UV visible spectroscopy	1
45	***IR*** spectroscopy – functional group and finger print region	1
46	Molecular vibrations – stretching and bending vibrations –applications of IR	1
47	***NMR*** (Nuclear magnetic resonance)- Working principle and instrumentation of NMR	1
48	chemical shift(δ) – applications of NMR	1
49	***Non-conventional energy sources***- Design, working, schematic diagram, advantages and disadvantages ofphotovoltaic cell, organic photo-voltaic hydropower, geothermal power, tidal, ocean thermal energy conversion (OTEC) open cycle OTEC, closed cycle OTEC and hybrid cycle OTEC	 2
	TOTAL	**60**

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_2	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
	UNIT-IIICHEMISTRY OF MATERIALS (12 hrs)	
24	***Nano materials*** **-** Introduction, sol-gel method	1
25	Preparation of carbon nanomaterials by carbon-arc, laser abalation methods	2
26	Types,applications of graphene-carbon nanotubes and fullerenes	1
27	Characterization by BET, SEM and TEM methods	1
28	***Refractories***- Definition , classification,	1
29	Properties (refractoriness, refractoriness under load, porosity and thermal spalling), failure of refractories	1
30	***Lubricants***- Definition, mechanism of lubricants	1
31	Properties (definition and importance)	1
32	***Cement***- 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
	UNIT-IV FUELS (12 hrs)	
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	3
38	Petroleum refining	1
39	Cracking	2
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
	UNIT-V WATER TECHNOLOGY (12 hrs)	
44	Introduction to Hardness of water, types of hardness	1
45	Determination of hardness by complexometric method	2
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	2
53	Reverse osmosis and electro dialysis	1
	TOTAL	**60**

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_2	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 Publicating Co., Latest Edition.

Text Books

1. *Engineering Chemistry* by Jain & Jain; Dhanpat Rai Publicating 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	No of lectures
	UNIT-I INTRODUCTION TO ENGINEERING MECHANICS	
1	***Force systems:*** Basic Concepts	1
2	Resultant of coplanar concurrent forces	2
3	Components of force in space	2
4	Moment of force and its applications	2
5	couples and resultant of force systems	1
6	Equilibrium of Force Systems	2
7	Free body diagram, Equations of equilibrium	2
8	Equilibrium of planar and spatial system.	2
	Sub total	**14**
	UNIT-II ANALYSIS OF STRUCTURES AND FRICTION	
1	***Trusses:*** Introduction	1
2	Analysis of trusses by method of joints	4
3	method of sections	2
4	***Friction:*** Introduction to Friction	1
5	Laws of friction,	1
6	Application to simple systems and Connected systems.	3
	Sub total	**12**
	UNIT-III CENTROID AND CENTRE OF GRAVITY, AREA MOMENT OF INERTIA AND MASS MOMENT INERTIA	
1	***Centroid:*** Centroid of simple figures from basic principles	2
2	centroid of composite sections;	2
3	***Centre of Gravity:*** Center of gravity of simple body from basic principles	2
4	Center of gravity of composite bodies	2
5	Pappus theorems.	1
6	***Area moments of Inertia:*** Definition – Polar Moment of Inertia	2
7	Transfer Theorem	1
8	Moments of Inertia of Composite Figures,	2

9	mass moment of inertia of composite bodies		2
		Sub total	**16**
UNIT-IV INTRODUCTION TO KINEMATICS AND KINETICS			
1	***Kinematics:*** Rectilinear and Curvilinear motions		2
2	Velocity and Acceleration		2
3	Motion of Rigid Body – Types and their Analysis in Planar Motion		2
4	***Kinetics:*** 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
		Sub total	**12**
UNIT-V WORK -ENERGY METHOD			
1	***Work – Energy Method:*** Equations for Translation		3
2	Work-Energy Applications to Particle Motion		2
3	Connected System-Fixed Axis Rotation and Plane Motion		2
4	Impulse momentum method		3
		Sub total	**10**
		Total	**64**

Text Books

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 EdnMcGraw 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
	UNIT-I		
1	**Introduction to Computers**: 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/0	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
		Total no. of classes ------ 12	
	UNIT-II		
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	3	T1, T3, R2
15	Repetition: Basic loop structures, pre-test & post-test loop, Counter controlled, Condition controlled loops, while & do while	4	T1, T3, R2
16	Branching: break & continue	1	T1, T3, R2
17	Modular programming – functions and parameter declaration	2	T1, T2
18	Returning values, types of parameter	1	T1, T2
19	Recursion- Definition, base condition	2	T1,T2
		Total no. of classes ---- 15	
	UNIT-III		
20	Introduction to arrays, Array Initialization, Input & output of an array	1	T1, T3
21	Problem solving using 1D Arrays	2	T1, T3, R2
22	Array as arguments	1	T1, T3, R2
23	Introduction to 2D arrays – Matrix operations	3	T1, T3, R2
24	2D array as argument	1	T1, T3, R2
25	Introduction to Strings, String I/O, String	2	T1, T3, R2

	processing		
26	Problem solving using Strings	2	T1, T3, R2
27	Strings as argument	2	T1, T3, R2
			Total no. of classes ---- 14
	UNIT-IV		
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	2	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	2	T1, T2, R1
35	Command line argument	1	T1, T2, R1
36	Introduction to Structures, Declaration & Initialization, accessing members	2	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, typedef, enum and bitfields	2	T1, T2, R1
			Total no. of classes ---- 17
	UNIT-V		
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
			Total no. of classes ---- 7
			Total number of classes: 65

Text Books:

T1. ANSI C Programming, E Balaguruswamy, Mc-GrawHill, 5th 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, YashwantKanetkar, BPB Publications, Mastering in C, KR VenuGopal, TMH

PROBLEM SOLVING USING PYTHON (Except CIV & MEC))

S.NO	TOPIC NAME	NO. OF HOURS	TEXT BOOK & REFERENCE
	Unit-1		
1	**Introduction:** Introduction to Python, Program Development Cycle	2	T1 & R1
2	Input, Processing, and Output, Displaying Output with the Print Function	2	T1 & R1
3	Comments, Variables, Reading Input from the Keyboard,	2	T1 & R1
4	Performing Calculations, Operators	2	T1 & R1
5	Type conversions, Expressions, More about Data Output.	2	T1 & R1
6	**Data Types, and Expression:** Strings Assignment, and Comment, Numeric Data Types	2	T1 & R1
7	Character Sets, Using functions and Modules.	1	T1 & R1
8	**Decision Structures and Boolean Logic:** if, if-else, if-elif-else Statements, Nested Decision Structures, Comparing Strings, Logical Operators, Boolean Variables.	2	T1 & R1
9	**Repetition Structures:** Introduction, while loop, for loop, Calculating a Running Total, Input Validation Loops, Nested Loops.	2	T1 & R1
	Number of classes	**17**	
	Unit-2		
10	**Control Statement:** 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	**Strings and Text Files:** Accessing Character and Substring in Strings, Data Encryption	3	T1
13	Strings and Number Systems, String Methods Text Files.	3	T1
	Number of classes	**10**	
	UNIT-3		
14	Lists, Defining Simple Functions	2	T1 & R1

15	Dictionaries	2	T1 & R1
16	**Design with Function:** Functions as Abstraction Mechanisms	2	T1 & R1
17	Design with Recursive Functions, Case Study Gathering Information from a File System	3	T1 & R1
18	Modules: Modules, Standard Modules, Packages.	3	T1 & R1
	Number of classes	**12**	
UNIT-4			
19	**File Operations:** Reading config files in python, Writing log files in python	2	T1 & R1
20	Understanding read functions, read(), readline() and readlines()	2	T1 & R1
21	Understanding write functions, write() and writelines()	2	T1 & R1
22	Manipulating file pointer using seek, Programming using file operations	2	T1 & R1
23	**Object Oriented Programming:** Concept of class, object and instances, Constructor, class attributes and destructors	2	T1 & R1
24	Real time use of class in live projects, Inheritance	2	T1 & R1
25	overlapping and overloading operators	2	T1 & R1
26	Adding and retrieving dynamic attributes of classes, Programming using Oops support	3	T1 & R1
27	Design with Classes: Objects and Classes, Data modeling Examples	2	T1 & R1
28	Case Study An ATM, Structuring Classes with Inheritance and Polymorphism	3	T1 & R1
	Number of classes	**22**	
UNIT-5			
37	**Errors and Exceptions:** Syntax Errors, Exceptions	1	T1 & R1
38	Handling Exceptions, Raising Exceptions, User-defined Exceptions	2	T1 & R1
39	Defining Clean-up Actions, Redefined Clean-up Actions	2	T1 & R1
40	**Graphical User Interfaces:** The Behaviour of Terminal Based Programs and GUI-Based	2	T1 & R1

41	Simple GUI-Based Programs, and other useful GUI Resources.	2	T1 & R1
42	**Programming**: Introduction to Programming Concepts with Scratch.	2	T1 & R1
	Number of classes	**11**	
	Total number of classes	**72**	

Text Books

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

(CSE, INF, AID, CSM, CSO & CIC)

No.	**Topic Name**	**No. of Periods**
UNIT–I: DC & AC Circuits **DC Circuits**: 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] **AC Circuits**: 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	2
6	star-delta and delta-star transformations	2
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
UNIT–II: DC Machines **DC Generator**: Construction-Principle and operation of DC Generator - EMF equation -Types– Applications [Elementary treatment only] **DC Motor**: 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	2
14	EMF equation of DC Generator	2
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

UNIT-III: AC Machines

Single Phase Transformer

Construction, Principle and operation of Single Phase Transformer –EMF Equation-Losses Efficiency. [Elementary treatment only]

Three Phase Induction Motor

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

21	Construction of Single Phase Transformer	2
22	Principle and operation of Single Phase Transformer	2
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

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	2
30	PN Junction Diode-characteristics	2
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

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	2

37	working of bipolar junction transistor	2
38	CB Configurations and characteristics	3
39	CE Configurations and characteristics	3
40	CC Configurations and characteristics	2

Text books

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.

BASICS OF ELECTRICAL & ELECTRONICS ENGINEERING

(CIV &MEC)

No.	**Topic Name**	**No. of Periods**
UNIT–I: DC & AC Circuits: **DC Circuits**: 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] **AC Circuits**: 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	2
6	star-delta and delta-star transformations	2
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
UNIT–II: DC Machines: **DC Generator**: Construction-Principle and operation of DC Generator - EMF equation -Types– Applications [Elementary treatment only] **DC Motor**: 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	2

14	EMF equation of DC Generator	2
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

UNIT-III: AC Machines:

Single Phase Transformer:

Construction, Principle and operation of Single Phase Transformer –EMF Equation-Losses Efficiency. [Elementary treatment only]

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

21	Construction of Single Phase Transformer	2
22	Principle and operation of Single Phase Transformer	2
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 :

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

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

UNIT-V Bipolar Junction Transistors :

Construction and working of bipolar junction transistor, CB, CE and CC Configurations and characteristics. [Elementary treatment only]

36	Construction of bipolar junction transistor	2
37	working of bipolar junction transistor	2
38	CB Configurations and characteristics	3
39	CE Configurations and characteristics	3
40	CC Configurations and characteristics	2

Text books

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	Contents	No. of Hours
I	**DC Circuits-Basic Laws and Methods of Analysis** **Basic Laws:** 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. **Methods of Analysis:** Mesh Analysis, Mesh analysis with current sources, Nodal analysis and Nodal analysis with voltage sources. **Applications:** Lighting Systems and Electricity Bills	**(15 Hrs)**
II	**SinusoidalSteadyStateAnalysis ofACcircuits** Review AC fundamentals, Phasor representation ofsinusoidalwaves, Phasor RelationshipsforCircuitElements,Impedance andAdmittance,Nodal Analysis, Meshanalysis,AC poweranalysis. **Applications:**PowerMeasurement, ElectricityConsumptionCostBills	**(10Hrs)**
III	**Circuit Theorems** **Circuit Theorems for DC Circuits:** Linearity Property, Superposition Theorem, Thevenin's Theorem, Norton's Theorem, Maximum Power Transfer Theorem, and Reciprocity Theorem. **Circuit Theorems for AC Circuits:** Thevenin's Theorem, Norton's Theorem andMaximum Power Transfer Theorem. **Applications:** Source Modeling, Resistance Measurement	**(15 Hrs)**

IV	**Two Port Networks and Coupled Circuits** **Two port Networks**: 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 **Coupled circuits:** Self and Mutual inductances, dot convention, coefficient of coupling, Analysis of coupled circuits. **Applications:** Transformer and Transistor Circuits, Ladder	**(11 Hrs)**
V	**DC Transients** **First Order Circuits:** 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 **Second Order Circuits:** The Source-Free Series RLC Circuit, Step Response of a Series RLC Circuit (Can Use Laplace Transform)	**(11 Hrs)**

Learning Resources

Text books:

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	No. of Hours
1	**UNIT-I Introduction to Electrical Circuits** Introduction to Electrical Circuits	1
2	Content beyond syllabus: Fundamental electrical terminology like voltage, current, resistors, inductors,	1

	capacitor, ohms law etc	
3	Passive components and their V-I relations	1
4	Sources (dependent and independent)	1
5	Kirchoff'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	1
12	Problems	1
13	Bridge courses: Super node and super mesh concepts	2
14	Problems	1
12	**UNIT-II Single Phase A.C Systems** **Single Phase A.C Systems:** Periodic waveforms (determination of rms, average value and form factor)	1
13	**Content beyond syllabus:** Basic terminology in types sources (AC&DC), sinusoidal waveform and terms derived from it.	1
14	Concept of phase angle and phase difference	1
15	Complex and polar forms of representations, steady state analysis of R	2
16	Problems	1
17	Complex and polar forms of representations, steady state analysis of L	2
18	Problems	1
19	Complex and polar forms of representations, steady state analysis of C	2
20	Problems	1
21	Power Factor and its significance – Real, Reactive power and apparent Power.	1
22	Problems	2
22	**UNIT – III: Resonance** Nodal analysis of AC Circuits	3
23	Nodal analysis of AC Circuits	3
24	Anti resonance and resonanace	1
25	concept of band width and Quality factor.	1

26	Problems	2
27	**Content beyond syllabus**: Parallel resonance	2
27	**UNIT – V: Magnetic Circuits** Basic definition of MMF, flux and reluctance.	1
28	**Bridge course:** Basic knowledge about permanent magnets and residual magnetism	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	2
38	Problems	1

Text Book

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

BASIC ELECTRONIC DEVICES & CIRCUITS(EEE)

Unit	Contents	No. of Hours
I	**Junction Diode Characteristics** **P-NJunctionDiode**QualitativeTheoryofP-NJunction,P-NJunction as aDiode,DiodeEquation(Qualitative), Volt-Ampere Characteristics,Temperaturedependence of VI characteristic, IdealversusPractical–Resistancelevels(StaticandDynamic),Transition and DiffusionCapacitances, Diode EquivalentCircuits, Load Line Analysis, Breakdown MechanismsinSemiconductorDiodes. **Special Diodes**	**(10 Hrs)**

	ZenerDiodeCharacteristics,PrincipleofOperationLEDandPhoto Diode.	
II	**Diode Applications** **Rectifiers**:Halfwaverectifier,ripplefactor,fullwaverectifier, Harmonic components in a rectifier circuit Rectifier withFilters(QualitativeTreatmentonly):Inductorfilter,Capacitor filter,QualitativeTreatmentofL-sectionfilter,Pi–sectionfilter,MultipleLandpi-sectionandfilter,andcomparisonof various filter circuits in terms of ripple factorsVoltageRegulators:Simplecircuitofaregulatorusingzener diode.	**(12 Hrs)**
III	**Transistor Characteristics** **Bi-polarJunctionTransistors**(BJT):FormationofN-P-NandP-N-Ptransistors,Transistorcurrentcomponents,OperationofBJT,BJTcharacteristics(CE,CBconfigurations), Earlyeffect,Currentequations,RelationbetweenAlphaandBeta,typical transistor junction voltage values and LimitsofOperation,Transistor as an amplifier. **Junction Field Effect Transistors**(JFET): Junction Field Effect Transistor (JFET) structure, Drain and TransferCharacteristics,SignificanceofPinch-OffVoltage,JFETasanamplifier and switch, Comparison of BJT and JFET.	**(12 Hrs)**
IV	**Transistor Amplifiers** **BiasingandStabilisation**:NeedforProperBiasing,Q-pointstability,FixedandVoltageDividerbiasingforBJT, EmitterDegeneration,DesignofSelfBiasingcircuit,ThermalStabilityconsiderations.Fixed, Voltage Divider biasing for JFET. **Small Signal Low frequency analysis of BJT and FET amplifiers:**Smallsignallowfrequencyh-parametermodelof BJT. Approximate model, Analysis of BJTamplifiers using ApproximatemodelforCB,CCandCEconfigurations,Analysis of JFETAmplifiers,Analysis of CS, CD Amplifiers.	**(14Hrs)**

V	**Feedback Amplifiers** **Negative Feedback Amplifiers:**Concept of feedback,Classificationof feedback amplifiers,General characteristics of negativefeedbackamplifiers,EffectofFeedback oninputand output characteristics, Voltage series, voltage shunt, current series,andcurrentshuntfeedbackamplifierswithdiscretecomponents and their analysis **Oscillators**: Condition for oscillations. RC-phase shiftoscillators with Transistor and FET, Hartley and Colpittsoscillators, Wein bridge oscillator, Crystal oscillators,Frequency and amplitude stability of oscillators.	**(12 Hrs)**

Text books:

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, INF, AID, CIC, CSM, and CSO)

Unit	Contents	No. of Hours
I	**Digital Systems and Binary Numbers** 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.	**12**

II	**Concept of Boolean algebra** 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.	**12**
III	**Combinational Logic** 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.	**12**
IV	**Synchronous Sequential Logic** 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.	**12**
V	**Registers and Counters** Registers, Shift Registers, Ripple Counters, Synchronous Counters, RingCounter, Johnson Counter.	**12**

TEXT BOOKS:

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.

BUILDINGMATERIALSAND CONSTRUCTION (CIV)

Unit	Contents	No. of Hours
I	**UNIT-I : :Building Materials-I** Properties of building stones –relation to their structuralrequirements. Classification of stones Stone quarrying – precautions inblasting, Dressing of stone	 2 1 2 1

	Classification of aggregate Composition of good brick earth, various methods of manufacture of bricks	2 1 2
II	**BuildingMaterials-II** Characteristics of good tilemanufacturing methods, Types oftiles General term in Steel, Manufacturingof steel Uses of steel, Market forms of steel Glass, Manufacturing of Glass Structure – properties of wood Seasoning of timber Classification of various types ofwoods used in buildings Defects in timber Alternative materials for wood Galvanized Iron, Fiber-reinforced plastics, steel, Aluminum.	 1 2 2 2 2 1 1 1 2 2 1
III	**BuildingMaterials-III** Various ingredients of lime Constituents of classification of lime stone various methods of manufacture of lime. Portland cement Chemical Compositionhydration, 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 importancevarious tests for concrete.	 1 2 1 1 2 3 1 1
IV	**BUILDINGCOMPONENTSand MASONRY** Lintels, Arches, Vaultsstair cases – Types Different types of floors-Concrete, Mosaic, Terrazzofloors, Pitched, flat and curvedRoofs. Lean-to-Roof, CoupledRoofs, Trussed roofs King and Queen Post Trusses. RCC Roofs, Madras Terrace andPrefabricated Roofs. Types of masonry English and Flemish bonds Rubble and Ashlar masonry Cavity and Partition walls.	 2 1 4 3 1 2 2 1

V	**UNIT:VBUILDINGSERVICESANDFINISHINGS**	
	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

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 (Common to All)

S.NO	TOPIC	No. of Periods
1	**UNIT-1 Introduction to Engineering Drawing & AUTOCAD** Introduction to Engineering Drawing and overview of Conventional tools used. Concepts of Various Engineering curves.	2 T
2	Introduction of AutoCAD ,Setting Up the Workspace, Preferences, Customization,Snaps,Command Interface Some Common Commands -2D Draw ,Modify Commands	2 L
3	Select any 3 Experiments Depending on Course 1. Cycloids, 2. Involutes ,3. Gear tooth profile Generation ,4. Circuit Design ,5. Electrical Routing	2T 2 L
4	Select any 3 Experiments Depending on Course 1. Cycloids, 2. Involutes ,3. Gear tooth profile Generation ,4. Circuit Design ,5. Electrical Routing	2 L 2 P
5	Annotation ,Layers,Block creation & Insertion Properties,Groups ,views ,utilities ,Compare , Palettes , External References	2T
6	Annotation ,Layers,Block creation & Insertion Properties,Groups ,views ,utilities ,Compare , Palettes , External References	2T

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	2T 2L
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	2 L 2 P
9	Some Common Commands -3D Draw ,Modify Commands ,Viewports, Rendering, Parts/assemblies.	2 L
10	**UNIT-2THEORY OF PROJECTION** Principles of Orthographic Projections-Conventions – Projections of Points	2T
11	Projections of Points in various Quadrants and finding Shortest Distance from XY Line	2L
12	Projections of Lines Inclined to one plane and inclined to both planes	2T
13	Projections of Lines Inclined to one plane and inclined to both planes	2L
14	Projections of planes inclined to one plane or inclined to both Planes	2T
15	Projections of planes inclined to one plane or inclined to both Planes	2L
16	**UNIT-3Projections of Regular Solids** Projections of Solids –with the axis perpendicular to one of the principal planes	2T
17	Projections of Solids –with the axis perpendicular to one of the principal planes	2L
18	Projections of Solids –with the axis Inclined to one of the principal planes	2T
19	Projections of Solids –with the axis Inclined to one of the principal planes	2L
20	Projections of Solids –with the axis Inclined to Both the principal planes	2T
21	Projections of Solids –with the axis Inclined to Both the principal planes	2L
22	**UNIT-4 Development of surfaces & sectional orthographic views**	2T

	Development of surfaces of Right Regular Solids – Prism, Pyramid	
23	Development of surfaces of Right Regular Solids – Prism, Pyramid	2L
24	Development of surfaces of Right Regular Solids – Cylinder and Cone	2T
25	Development of surfaces of Right Regular Solids – Cylinder and Cone	2L
26	Draw the sectional orthographic views of geometrical solids	2T
27	Draw the sectional orthographic views of geometrical solids	2L
28	**UNIT-5Isometric Projections** Conversion of isometric views to orthographic views	2T
29	Conversion of isometric views to orthographic views	2L
30	Drawing of isometric views - simple Solids	2T
31	Drawing of isometric views - simple Solids	2L
32	Conversion of orthographic views to isometric views of simple Drawings	2T
33	Conversion of orthographic views to isometric views of simple Drawings	2L
	Grand Total	**66**

TEXT BOOKS

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, McGrawHill 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

COMPUTER AIDED ADVANCED ENGINEERING DRAWING (MEC)

S.No	LESSON PLAN : TOPIC	No. of Hours
1	**Unit-1:Introduction** to 3D Experience and Siemens Product Design Lab, software's used and Basic Introduction of CAD Tools **SKETCHER**: Workbench Introduction, Types of Sketches, Creating profiles,	1T
2	**Experiment No1**	3P
3	Practice of Profile tool bar, Sketcher constraints, sketcher operations, Transformation of profiles, Projection from 3D elements,	1T
4	**Experiment No2**	3P
5	Practice of transform tools with suitable sketches, Sketch analysis, Sketch modifications ,Create Basic Sketches with ISO Constraints	1T
6	**Experiment No3**	3P
7	**Unit-2:PART DESIGN:** Workbench Introduction Basic Sketch based Features: PAD, Drafted Fillet PAD,Multi PAD Reference Elements, Practice on types of points, lines and planes	1T
8	**Experiment No4**	3P
9	Basic Sketch based Features POCKET, Drafted Fillet POCKET,Multi POCKET	1T
10	**Experiment No5** Practice on conversion of basic 2D to 3D parts-1	3P
11	SHAFT,GROOVE,HOLE,	1T
12	**Experiment No6** Practice on conversion of basic 2D to 3D parts-2	3P
13	**Unit-3:Advanced Solid Features:** Ribs ,Slots & Multi-sections,Stiffner,Solid combine, Dress up features such as Fillets, chamfers, shell, Transformation of solids Practice of Pattern, mirror & Scaling	1T
14	**Experiment No7**	3P
15	Surface based features, Practice of Splitting solids with surfaces, Power copy, Practice of Power copy tool.	1T

16	**Experiment No8**	3P
17	Introduction to Body concept, Practice 3D models using Booleans Creation of complex parts using body concept	1T
18	**Experiment No9**	3P
19	**Unit-4:ASSEMBLY DESIGN**: Introduction to Workbench, , Types of Assembly –approach, Importing of Parts & Products Assembly Constraints	1T
20	**Experiment No10**	3P
21	Practice of Product structure tools with basic Assembly	1T
22	**Experiment No11**	3P
23	**INTERPENETRATION OF RIGHT REGULAR SOLIDS**: Intersection of Cylinder Vs Cylinder, Cylinder Vs Prism, Cylinder Vs Cone, Prism Vs Cone.	1T
24	**Experiment No12**	3P
25	**Unit-5: DRAFTING:**, Introduction to Workbench, Drafting Approach, View Creation, and Dimensioning	1T
26	**Experiment No13**	3P
27	Geometry modification, Editing Option and Developing sectional views with detailed dimensions.	1T
28	**Experiment No14**	3P
29	**Introduction of Perspective Projections**	1T
30	**Experiment No15** **Basic sheet metal operations**	3P
31	Internal Exam	3P
Total :15L+48P = 63		

Text Book

CATIA V5R20 for Designers by Prof. Sham Tickoo Purdue Univ.

PRACTICAL COURSES

Humanities and Social Sciences Courses

COMMUNICATIVE ENGLISH

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 Brand
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 OgMandino

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. Todeterminethenumericalapertureofagivenopticalfiberand to find its acceptance angle.

All Branches Except CIV & MEC Branches

1. Verification of laws of vibrations in stretched strings – Sonometer.
2. Todeterminethenumericalapertureofagivenopticalfiberand to find its acceptance angle.

ENGINEERING/APPLIED PHYSICS - VIRTUAL LAB – ASSIGNMENTS

Any <u>Three</u> of the Listed <u>Twelve</u> 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

ENGINEERING/APPLIED CHEMISTRY LAB

Choice of any Ten out of Sixteen Experiments Listed

List of Experiments

Sl.No.	Title of the experiment
1	Introduction to chemistry laboratory- Molarity,Normality,Primary,Secondary standard solutions, Volumetric titrations ,Quantitative analysis,Qualitative analysis etc.
2	Determination of HCl using standard Na_2CO_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 Na_2CO_3 and NaOH
15	Determination of ferrous iron using standard $K_2Cr_2O_7$ solution
	NOTE:Choice of any 10 experiments from the above
	Experiments beyond the syllabus
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 it 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 [1,0,1,1,0,0,0,0,1,0,0] 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 [1,1,2,3,4,3,0,0] 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 x1/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, INF, 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 WorkshopPractice:

1. Identification,SpecificationsandTestingofactivedevices,Diodes,BJTs, JFETs, LEDs, LCDs, SCR, UJT.
2. Soldering Practice- Simple circuits using active and passive components.
3. StudyandoperationofAmmeters,Voltmeters,Transformers,AnalogandDigital 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-ICharacteristic
   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. BJTCharacteristics (CEConfiguration)
   Part A: Input Characteristics
   Part B: output Characteristics
5. FETCharacteristics
   Part A: Drain Characteristics
   Part B:Transfer Characteristics
6. BJTBiasing
7. FETBiasing
8. CRO Operation and its Measurement
9. Design of CE Amplifier
10. Frequency response of CE Amplifier
11. Designanyoscillatorandmeasurefrequencyofoscillation(RCPHASE SHIFT, WEIN BRIDGE)
12. Design any oscillator and measure frequency (HARTLEY, and COLPITT'S)
13. Designof variable DC power supply (application).

COMPUTER ENGINEERING WORKSHOP

(Common to CSE, INF, AID, CIC, CSM, and CSO)

S.NO	TOPIC NAME	NO. OF HOURS	TEXT BOOK & REFERENCE
	Unit-1		
1	**Introduction**: SimpleComputer 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
	Number of classes	**7**	
	UNIT-2		
5	Algorithm / Pseudo code development	2	T1
6	Flowchart with description	2	T1
7	The one-zero game, 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
	Number of classes	**10**	
	UNIT-3		
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
	Number of classes	**8**	
UNIT-4			
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
	Number of classes	**10**	
UNIT-5			
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
	Number of classes	**07**	
Total number of classes		**42**	

Text Books:

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:

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 (CIV & MEC)

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 motor
f) Soldering of wires

MANDATORY ZERO CREDIT COURSES
ENVIRONMENTAL SCIENCE

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

	mega-diversity nation	
20	Hot-sports of biodiversity – Threats to biodiversity: habitat loss, poaching of wildlife, man-wildlife conflicts	1
21	Endangered and endemic species of India	1
22	Conservation of biodiversity: In-situ and Ex-situ conservation of biodiversity.	1
UNIT – III: Environmental Pollution and Solid Waste Management		
23	**ENVIRONMENTAL POLLUTION:** Definition, Cause, effects and control measures of:Air Pollution.	1
24	Water pollution, Soil pollution	1
25	Marine pollution, Noise pollution	1
26	Thermal pollution, Nuclear hazards	1
27	**SOLID WASTE MANAGEMENT :**Causes**,** effects and control measures of urban and industrial wastes	1
	Role of an individual in prevention of pollution – Pollution case studies	1
28	Disaster management: floods, earthquake, cyclone and landslides.	1
UNIT – IV: Social Issues and the Environment		
29	**SOCIAL ISSUES AND THE ENVIRONMENT:** From Unsustainable to Sustainable development	1
30	Urban problems related to energy – Water conservation, rain water harvesting, watershed management	1
31	Resettlement and rehabilitation of people; its problems and concerns. Case studies – Environmental ethics: Issues and possible solutions	1
32	Climate change, global warming, acid rain, ozone layer depletion, nuclear accidents and holocaust. Case Studies	1
	Wasteland reclamation. – Consumerism and waste products. – Environment Protection Act.	1
33	Air (Prevention and Control of Pollution) Act Water (Prevention and control of Pollution) Act	1
34	Wildlife Protection Act – Forest Conservation Act – Issues involved in enforcement of environmental legislation – Public awareness	1
UNIT – V: Human Population and the Environment		
35	**HUMAN POPULATION AND THE ENVIRONMENT:** Population growth, variation among nations. Population explosion	1
37	Family Welfare Programmes – Environment and human health	1
	Human Rights – Value Education – HIV/AIDS – Women and Child Welfare	1
38	Role of information Technology in Environment and human	1

	health – Case studies.	
39	**FIELD WORK :** Visit to a local area to document environmental assets River/forest grassland/hill/mountain	1
40	Visit to a local polluted site- Urban/Rural/Industrial/Agricultural Study of common plants, insects, and birds – river, hill slopes, etc.	1
	Total No of Hours	**40 Hrs**

Text Books

1. Text book of Environmental Studies for Undergraduate Courses by ErachBharucha 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. Text book 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 Text Book 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.

INDIAN CONSTITUTION

S. No	Topic	No. of Lectures
UNIT-I Introduction to Indian Constitution (5 hrs)		
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
UNIT-II Union Government and its Administration Structure of the Indian Union (6 hrs)		
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	LokSabha, RajyaSabha	1
11	The Supreme Court and High Court: Powers and Functions	1
UNIT-III State Government and its Administration (6 hrs)		
12	Governor - Role and Position	2
13	CM and Council of ministers	2
14	State Secretariat: Organisation, Structure and Functions	2
UNIT-IV Local Administration (9 hrs)		
15	District's Administration Head - Role and Importance	1
16	Municipalities - Mayor and role of Elected Representative	1
17	CEO of Municipal Corporation	1
18	Pachayati Raj: Function	1
19	PRI: ZilaPanchayat	1
20	CEO ZilaPanchayat: Block level Organizational Hierarchy - (Different departments)	1
21	Village level - Role of Elected and Appointed officials - Importance of grass root democracy	2
UNIT-V Election Commission (6 hrs)		
22	Election Commission- Role of Chief Election Commissioner and Election Commissionerate	2
23	State Election Commission	2
24	Functions of Commissions for the welfare of SC/ST/OBC and women	2
	Total	**32**

References

1. Durga Das Basu, Introduction to the Constitution of India, Prentice – Hall of India Pvt. Ltd.. New Delhi
2. SubashKashyap, 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 , /109104045/, /101104065/
2. www.hss.iitb.ac.in/en/lecture-details

3. www.iitb.ac.in/en/event/2nd-lecture-institute-lecture-series-indian-constitution

MANDATORY LIFE SKILLS COURSES

Course-1: Quantitative Aptitude (Elementary)

1. Number Series
2. Letter Series
3. Number Analogy
4. Analogy
5. Odd Man out
6. Coding and Decoding
7. Directions
8. Number System
9. HCF & LCM
10. Percentages
11. Profit and Loss
12. Discount
13. Simple Interest and Compound Interest

Course-2: Verbal Ability

1. How to Test Your Present Vocabulary
2. How to Start Building Your Vocabulary
3. How to Talk About Personality Types
4. How to Talk About Doctors
5. How to Talk About Various Practitioners
6. How to Talk About Science and Scientists
7. How to Talk About Liars and Lying
8. How to Check Your Progress: Comprehensive Test
9. How to Talk About Actions
10. How to Talk About Various Speech Habits
11. How to Insult Your Enemies
12. How to Flatter Your Friends
13. How to Check Your Progress: Comprehensive Test II
14. How to Talk About Common Phenomena and Occurrences
15. How to Talk About What Goes On
16. How to Talk About a Variety of Personal Characteristics
7. How to Check Your Progress: Comprehensive Test III
18. How to Check Your Standing as an Amateur Etymologist
19. How to Keep Building Your Vocabulary

Appendix: Some Esoteric Phobias
Textbook: Word Power Made Easy by Norman Lewis

Undertaking

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

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 VasireddyVenkatadri Institute of Technology, Nambur, Guntur do hereby undertake and abide by the following terms. I will bring the **ACKNOWLEDGEMENT** provided below duly signed by meand my parent/guardianon_____
_____the re- opening day of theCollege.

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 academicyear.
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 parentseveryday.
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 thatsemester.**
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 thanthe 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 JNTUKrules/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 thelaw.
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 concernedHOD/Principal.

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

ACKNOWLEDGEMENT

I, Mr/Miss _____ bearingRegd.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	Signature of Parent/Guardian
Name:	Name:
Roll.No.:	Address:
MobileNumber:	MobileNumber:

HELP LINES			
ADMINISTRATION			
S.No.	**Name**	**Designation**	**Contact No**
1	Dr. Y Mallikarjuna Reddy	Principal	9949359336
2	Dr K Giri Babu	Dean of Studies	9885263148
3	Dr. N Kumara Swamy	Dean of Academics	9490386288
3	Dr. R Naveen	Director (CoE)	9849637666
4	Dr. P Ammi Reddy	Controller of Examinations	9848068948
5	Mr.N.Siva Rama Krishna	Deputy Controller of Exams	9121214715
6	Dr.V.RamaChandran	Assistant Controller of Exams	9441410285
7	Mr. J Koteswara Sarma	Administrative Officer	9866384336
8	Mr. D Srinivas	Senior Assistant (Office)	9951023336
9	Mr. N KalyanSrinivas Mr. V. Srikanth	Junior Assistants(Admissions)	9849542336 9959943336
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