Bapatla Engineering College
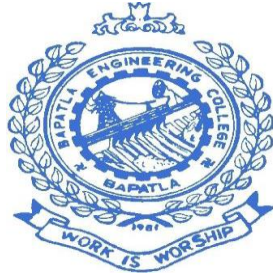## (*Autonomous*)
BAPATLA

ACADEMIC RULES & REGULATIONS and SYLLABUS
(R18 REGULATIONS)

HAND BOOK
(2019-2020)

First & Second Year B.Tech.

Bapatla Engineering College:: Bapatla
(Autonomous under Acharya Nagarjuna University)
(Sponsored by Bapatla Education Society)
BAPATLA-522102, Guntur District, A.P.
www.becbapatla.ac.in

Vision & Mission of the College

Vision:

To build centers of excellence, impart high quality education and instill high standards of ethics and professionalism through strategic efforts of our dedicated staff, which allows the college to effectively adapt to the ever changing aspects of education.

To empower the faculty and students with the knowledge, skills and innovative thinking to facilitate discovery in numerous existing and yet to be discovered fields of engineering, technology and interdisciplinary endeavors.

Mission:

Our mission is to impart the quality education at par with global standards to the students from all over India and in particular those from the local and rural areas. We continuously try to maintain high standards so as to make them technologically competent and ethically strong individuals who shall be able to improve the quality of life and economy of our country.

Profile of the College

Year of Start	1981
Courses offered	**B.Tech.:** 1. Civil Engineering (CE), 2. Computer Science & Engineering (CSE), 3. Electronics & Communication Engineering (ECE), 4. Electrical & Electronics Engineering (EEE), 5. Electronics & Instrumentation Engineering (EIE), 6. Information Technology (IT), 7. Mechanical Engineering (ME)
	M.Tech.: 1. CE (Structural Engineering), 2. ME (CAD/CAM), 3. ECE (Communication Engineering & Signal Processing), 4. EEE (Power Systems Engineering) & 5. C.S.E.
	Master of Computer Applications (MCA)
	M.Sc.: Mathematics, Physics, Electronics, Chemistry (Organic & Analytical) & Computer Science
Accredited by NBA in the years	07.05.2003 (CE, CSE, ECE, EEE, EIE, ME) 16.03.2007 (CH, CE, CSE, ECE, EEE, EIE, IT & ME) 04.01.2013 (CH, CE, CSE, ECE, EEE, EIE & ME)
Autonomous Status	2010
Accredited by NAAC	2015
Research Park	Innovation Centres: 1) Kuka Robotic Technology Centre 2) Bosch Rexroth Centre of Competence in Automation Technologies 3) Siemens Centre of Excellence 4)Industry Institute Interaction Cell 5) Centre for Continuing Education 6) Incubation Skill Development Cell
Library	Titles: 28,323; Books: 75,317, Journals: International Online-523, Print-30, National Print-90, Educational CDs- 3,237; No. of Staff: 8
Sports facilities	Cricket, Basket Ball, Volley Ball, Ball Badminton, Hockey, Tennis, Foot Ball, Table Tennis, Chess, Caroms & Weight Lifting, Weight Training
Area	30 Acres; Built-up Area: 56102 Sq.mt.
Awards	Best Library (2011, 14, 18), Best laboratory (2009, 10, 11), Best UG Performance College (2011, 12) ,Best Eco Friendly Campus (2016) from Acharya Nagarjuna University
CISCO	A two-way interactive CISCO Digital Media System that is first of its kind in the South Asia Pacific Region at a cost of Rs.3 Crores
Placement/Training	No. of Students placed in 2018-19: 450, No. of Companies visited: 50
Students Activities	Suryodhaya Society for Awakening Community **(SAC)** for social service, Centre for Creative Arts **(CCA)** for cultural & arts and **AWAAZ** the literary club with the main motto of nurturing the inherent talents in the students.
NCC / NSS	NCC (Army wing) unit with 50 cadets. Training will be given by the P.I. Staff from 1(A) Engr. Coy, Guntur. NSS with 300 volunteers.
Facilities	Hostel for girls, Food court, Own Transport, 24x7 power supply, Mineral water, Bank, Post Office

ABOUT THE BAPATLA EDUCATION SOCIETY

BAPATLA EDUCATION SOCIETY was established in the year 1962 registered No: 58/1962 under societies act XXI of 1860 with the objectives to found and run the Educational & Cultural Institutions.

Distinguished Office Bearers of the Society:

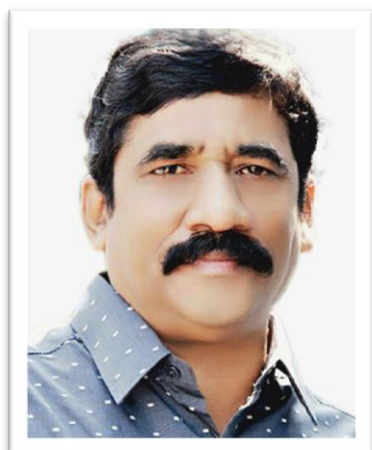|		
Sri M. Seshagiri Rao President	Sri Paladugu Paparao Vice President-1	Sri Burle Venkata Siva Rama Krishna Vice President-2
Sri Manam Nageswara Rao Secretary	Sri Panguluri Bhavannarayana Chowdary Jt. Secretary & Correspondent	Sri Chandrapati Venkaiah Treasurer

The management members are imbued with a spirit of selfless service and believe in the principle of Academic autonomy. Transparency of all financial transactions is strictly adhered and all payments and receipts are through bank transactions only. The Management obtains objective feedback about all aspects of the college and suitably advises and motivates employees in a discrete manner. As a mark of commitment to good management, rules and regulations are applied with justice and fair play. Above all, the management makes all out effort to provide healthy environment on the campus. (Lawns, Greenery including 1000 neem trees and CC roads provided)

MESSAGE FROM PRINCIPAL

Dr. V. Damodara Naidu
B.TECH. (Mech.), M.TECH. (Prod), IIT-Kgp, PH.D., JNTUH

A warm welcome to NAAC accredited Bapatla Engineering College (BEC). The Bapatla Engineering College (Autonomous), one of the seven educational institutions sponsored by the Bapatla Education Society, was established in 1981 with a vision to impart quality technical education and is affiliated to Acharya Nagarjuna University. The College is credited with beautifully laid out and thoughtfully designed. The college has well qualified faculty members from IITs, NITs and reputed universities and has 63 doctorates and more than 60 faculty pursuing Doctorate degrees.

The college is one of the first generation self-financed engineering colleges started in the year 1981 and is regarded as one of the best engineering colleges in the state of Andhra Pradesh.

The teaching learning process in the campus is meticulously planned and effectively implemented by the Heads of the Departments with the able support of the staff members. Continuous evaluation backed by remedial classes, student counseling and parent interactions, form the nucleus of the teaching learning process.

The college is chosen by several world renowned leaders such as Bosch Rexroth Center of Competence in Automation Technologies, Siemens Center of Excellence and Kuka Robotic Technology Center to have their centers of research and innovation under one roof in a unique Research Park established at a cost of Rs.20 Crores.

BEC has taken the class room teaching to world class level through the two-way interactive Digital Media System. We are member of Indian Society for Technical Education (ISTE), Computer Society of India (CSI) etc. Various workshops, seminars, conferences, and Faculty Development Programs (FDP) are conducted through ISTE, and add-on courses and several skill development programs are being organized by the college.

The Department of Training and Placement facilitates the maximum employment opportunities to all the deserving candidates of final and pre-final year students. Many of our Alumni are decorating the top positions at many reputed Multi-National Companies.

We always look at the employability skills and try to perfectly match with the requirements of the Industry. We impart training in Technical Skills and Life Skills (Soft Skills) as a part of our curriculum to mould and shape the personalities and make the students employable. In order to shape the life skills (soft skills), we are imparting regular training internally and through external resources as well.

We emphasize mainly on Assessment and Evaluation, analyzing the training needs of each candidate, and provide Career Guidance and Counseling. The college provides Training on Business English Communication Skills, Aptitude, Domain skills as needed by the Industry. We promote industrial visits and knowledge sessions to make students familiar with industrial practices. The college encourages students to pursue internships to gain work experience in industries and increase their employability. EDP Cell conducts various programs to develop entrepreneurship culture among students. Over 50 companies visited our college, and more than 65% of eligible students have been placed in various reputed companies for the academic year 2018-19. The students of the college continuously excel in national and international competitive examinations like GATE, IELTS, GRE and TOEFL. We have several Industry MoUs which will help to train faculty and students on latest trends in the technology. Some of the MOUS are listed below:

1.	NASSCOM, Delhi.	CSE/IT
2.	New Mexican State University, NEW Mexico, USA.	All Depts.
3.	Acer Engineers Private Limited, Hyderabad.	Civil Engg.
4.	ICT Academy, Chennai	All Depts.
5.	Caddy Code Solutions Pvt Ltd., Bangalore	IT
6.	APHRDI, Govt. of AP	All Depts.
7.	Sri Lakshmi Ganapathi Engineering Works (to be signed), Tenali.	Mech. Engg.
8.	Satyam Ventures Engineering Services Private Limited, Hyderabad (to be signed)	Mech. Engg.
9.	Construction Industry Development Council, Delhi	Civil Engg.
10.	Microlink Peripheral Controls Pvt. Ltd., Vijayawada	ECE
11.	SRC E-Solutions, Vijayawada	ECE
12.	BT & BT Management consultancy Pvt. Limited. (to be signed)	All Depts.

The college is enriched with Centre for Innovation Incubation and Entrepreneurship (CIIE) and well-established library with Digital Library facility that caters to the needs of student. The institution is a hub of Student clubs that helps them to gratify their creative and innovative minds and weaving social responsibility with leadership qualities among students. The college also provides amenities like subsidized transportation, food court, mineral water, internet, Bank, Post office, Ladies Hostel and Dispensary equipped with an ambulance for the convenience of faculty, staff and students.

We have Governing body (Autonomous), College Academic Council for the continuous improvement of academic performance. We have formed several Committees for Grievance and Redressal, Examination, Admission, Library, Student Welfare, Internal Complaints, Extra-Curricular Activities, Academic Audit, Disciplinary, Research, Sports, Training and Placement, Alumni Affairs, Anti-Ragging, Campus Facilities, and Maintenance under Planning and Evaluation Committee.

We wish all the students to utilize the infrastructure and the experienced faculty of our institution to equip themselves with emerging technologies and innovative skills that make them lead the nation in to new heights of advancement and development to enrich every citizen's life.

Heads of Departments

Dr. J. S. Rao
Head, Chemical
Engg. & COE

Dr. Naga Satish
Head, Civil
Engineering

Dr. Shaik Nazeer
Head, CSE

Dr. B. Chandra
Mohan, Head, ECE

Dr. N. Rama Devi
Head, EEE

Prof. Ch. Ramesh
Head, EIE

Prof. N. Siva Rama
Prasad
Head, IT

Dr. T Nancharaiah
Head, Mechanical
Engg.

Dr. P. Vijaya Saradhi
Head, Mathematics

Dr. K. Rama Krishna
Head, Physics

Dr. V. Madhava Rao
Head, Chemistry

Dr. P. AshaMadhavi
Head, English

Mr. K.N. Prasad
Head, MCA

Mr. A. Rama Mohana
Rao
Librarian

Mr. Justin Chako
Head, Placements

Dr.T.Chandrasekhara
Rao, Warden,
Campus Hostel

Mr. Meeravali Shaik
Physical Director

Mr. D. Gopala Krishna
Office Superintendent

Academic Rules & Regulations for B. Tech Program
(Approved by Academic Council & Governing Body of the College held on August 2018)

(Amended in August 2019; Effective for students admitted into First year B.Tech from the academic year 2018-2019 onwards – R18 Regulations).

1.0 EXTENT: All the rules and regulations, specified herein after, shall be read as a whole for the purpose of interpretation and when a doubt arises, the interpretation of the Chairman, Academic Council, Bapatla Engineering College (Autonomous) is final. As per the requirements of the Statutory Bodies, The Principal, Bapatla Engineering College (Autonomous), shall be the Chairman of the College Academic Council.

1.1 DURATION OF THE PROGRAMME AND MEDIUM OF INSTRUCTION: The duration of the B.Tech. Programme is for four academic years consisting of two semesters in each academic year. The medium of instruction and examinations is English.

2.0 ADMISSIONS:

2.1 Admission into the First year of any Four Year B.Tech. Programmes of study in Engineering: Admissions into the first year of B.Tech. Programme of Bapatla Engineering College (Autonomous) (*Subsequently referred to as* **B.E.C**) will be as per the norms stipulated by the Govt. of Andhra Pradesh from time to time.

2.2 Admission into the Second year of any Four year B.Tech. Programmes of study in Engineering as Lateral Entry Student**:** Admissions into the second year of B.Tech. Programme of B.E.C will be as per the norms stipulated by the Govt. of Andhra Pradesh from time to time.

2.3 Admissions with advance standing: These may arise in the following cases:

1) When a student seeks transfer from other colleges to B.E.C and intends to pursue B.Tech at B.E.C in an eligible branch of study.

2) When students of B.E.C get transferred from one regulation to another regulation or from previous curriculum to revised curriculum.

3) When a student, after long discontinuity, rejoins the college to complete his/her Programme of study for the award of the degree.

These admissions may be permitted by the Academic Council of B.E.C as per the norms stipulated by the statutory bodies and the Govt. of Andhra Pradesh from time to time. In all such cases for admission, when needed, permissions from the statutory bodies are to be obtained and the Programme of study at B.E.C will be governed by the transitory regulations stipulated in *4.3.3 and 4.3.4.*

3.0 Details of the Program:

S.No	Activity	Description
1.	Number of Semesters in an Academic Year	Two
2.	Course Work	15 Weeks. 90 instructional days.
3.	Evaluation	As per the Assessment and Examination Policy.

4.0 Programmes of study in B.Tech:

4.1 The Four year B.Tech Programme is offered in the following branches of study:

S.No.	Title of the UG Programme	Abbreviation
1.	Civil Engineering	CE
2.	Computer Science & Engineering	CS
3.	Electrical & Electronics Engineering	EE
4.	Electronics & Communication Engineering	EC
5.	Electronics & Instrumentation Engineering	EI
6.	Information Technology	IT
7.	Mechanical Engineering	ME

4.2 Structure of the Programme:

As per the Program Review Policy & AICTE model curriculum guidelines.

4.3 **Transitory Regulations**: For students admitted under advance standing (mentioned in 2.3) these transitory regulations will provide the *modus operandi*.

At the time of such admission, based on the Programme pursued (case by case)

1) Equivalent courses completed by the student are established by the BOS concerned.
2) Marks/Credits are transferred for all such equivalent courses and treated as successfully cleared in the Programme of study prescribed by the concerned BOS.
3) A Programme chart of residual courses not cleared will be derived and a Programme of study with duration specified will be prescribed for pursuit at B.E.C.
4) Marks obtained in the previous system, if the case be, are converted to grades and CGPA is calculated accordingly.

All other modalities and regulations governing shall be the same as those applicable to the stream of students with whom such a candidate is included into.

4.4 Curriculum for each Programme of study:

1) The Four year curriculum of any B.Tech Programme of study in any branch of engineering is formulated based on the guidelines mentioned in 4.2 and will be recommended by the Board of Studies concerned and is approved by the Academic council of the college.
2) In the case of students admitted through lateral entry, the respective regular curriculum from the second year onwards is to be pursued by such students. Foundation courses may be added if necessary.
3) In the case of students admitted under advanced standing, the equivalency will be prepared by the Department Committee and to be approved by the Board of Studies concerned and the Academic Council.
4) After approval from the Academic Council, Department informs the courses to be taken by all the students along with the academic regulations.

Table below shows a typical curriculum frame work for B.Tech Degree program.

S.No.	Subject Area	Average no. of credits
1.	Humanities & Social Sciences courses	12 - 14
2.	Basic Science Courses	21 – 28
3.	Engineering Science	18 - 21
4.	Professional Core courses	65 – 78
5.	Professional Elective Courses	15 - 21
6.	Open Electives	6 – 12
7.	Major Project / Seminar, etc	12
8.	MOOCs	2
9.	Summer Internship	2
10.	Mandatory courses (2 courses)*	0
	TOTAL	165 - 170

The students admitted through the **Lateral Entry scheme** have to complete **125 – 130** credits.

*For mandatory courses as suggested by UGC / AICTE no credits are allocated but obtaining pass grade in these subjects is compulsory to obtain degree.

4.5 The Maximum duration permitted to pursue the programme and cancellation of admission:

4.5.1 The maximum duration permitted for any student to successfully complete any four year B.Tech. Programme of study shall be:

1) Eight academic years in sequence from the year of admission for a normal student admitted into the first year of any Programme,
2) Six academic years in sequence from the year of admission for a Lateral entry student admitted into the second year of any Programme, and
3) For students admitted with advanced standing, the maximum time for completion of Programme study shall be twice the period in terms of academic years in sequence, stipulated in the Programme curriculum defined at the time of admission.

4.5.2 In case, any student fails to meet the applicable conditions for the eligibility of degree in the maximum stipulated period as mentioned in *4.5.1*, his/her admission stands cancelled and no degree will be awarded.

5.0 EXAMINATION& EVALUATION:

The performance of the students in each semester shall be assessed course wise. All assessments will be done on absolute mark basis. However, for the purpose of reporting the performance of a candidate, letter grades and grade points will be awarded as per section *9.1.*

EVALUATION:

The performance of the students in each semester shall be assessed course wise. All assessments will be done on absolute mark basis. However, for the purpose of reporting the performance of a candidate, letter grades and grade points will be awarded. The performance of a student in each course is assessed with alternate assessment methods, term examinations on a continuous basis during the semester called Continuous Internal Evaluation (CIE) and a Semester End Examination (SEE) conducted at the end of the semester. For each theory, design and/or drawing course, there shall be a comprehensive Semester End Examination (SEE) of three hours duration at the end of each Semester, except where stated otherwise in the detailed Scheme of Instruction.

The distribution of marks between Continuous Internal Evaluation (CIE) and Semester End Examination (SEE) to be conducted at the end of the semester will be as follows:

Nature of the Course	CIE	SEE
Theory subjects	50	50
Drawing	50	50
Practical	50	50
Term Paper	50	50
Project work	75	75

5.1 Continuous Internal Evaluation (CIE) in Theory and Drawing subjects:

In each Semester there shall be two Term examinations and some *Alternate Assessment Tools (AAT)* like Home Assignment, Class Test, Problem Solving, Group Discussion, Quiz, Seminar and Field Study in every theory course. The Alternate Assessment Tools with detailed modality of evaluation for each course shall be finalized by the teacher concerned before beginning of the course. It will be reviewed and approved by the Department Committee.

The Term Examination is conducted in the regular mode according to a schedule which will be common for a particular year of study. The maximum weightage for Term Examinations, AATs and the calculation of marks for CIE in a theory course is given in the following table.

Particulars	Term Exams (Max. 20 marks)	AAT (Max. 30 marks)
Better Performed exam	75% of marks obtained	Continuous assessment by teacher as per the predetermined course delivery & assessment plan. (Min. two assessments)
Other exam	25% of marks obtained	

A minimum of 25 (50%) marks are to be secured exclusively in the Continuous Internal Evaluation (CIE) in order to be declared as passed in that course and eligible to write the SEE of that course.

Semester End Examination (SEE) in Theory, Design and/or Drawing course:

a) For each theory, design and/or drawing course, there shall be a comprehensive Semester End Examination (SEE) of three hours duration at the end of each Semester for 50 marks, except where stated otherwise in the detailed Scheme of Instruction. Question paper setting shall be set by the teacher or teachers together in a multi section courses and to be verified as described in policy document.

b) A minimum of 20 (40%) marks are to be secured exclusively in the Semester End Examination (SEE) of theory, design and/or drawing course in order to be declared as passed in that course and for the award of the grade in the course.

5.3 Continuous Internal Evaluation (CIE) in laboratory courses:

The evaluation for Laboratory course is based on CIE and SEE. The CIE for 50 marks comprises of 20 marks for day to day laboratory work, 15 marks for record submission and 15 marks for a laboratory examination at the end of the semester.

In any semester, a minimum of 90 percent of prescribed number of experiments / exercises specified in the syllabi for laboratory course shall be taken up by the students. They shall

complete these experiments / exercises in all respects and get the record certified by the internal lab teacher concerned and the Head of the Department concerned to be eligible to appear for the Final Examination in that laboratory course.

A minimum of 25 (50%) marks are to be secured exclusively in the Continuous Internal Evaluation (CIE) in order to be declared as passed in that lab course and eligible to write the SEE of that lab course.

5.4 Semester End Examination (SEE) in laboratory courses:

a) For each laboratory course, the Semester End Examination (SEE) shall be conducted by one internal and one external examiner appointed by the Principal and the duration of the exam shall be for three hours. The SEE is for 50 marks which include 10 marks for write up, 20 marks for lab experiment/exercise, 15 marks for Viva-voce and 5 marks for general impression.

b) A minimum of 20 (40%) marks shall be obtained in SEE of a laboratory course in order to be declared as passed and for the award of the grade in that laboratory course.

5.5 Evaluation of Term Paper:

a) A term paper is to be submitted by each student in the 7th semester which would be a precursor to the project work to be done in the 8th semester. The evaluation is based on CIE for 50 marks, which includes a minimum of two seminars/presentations for 20 marks and the report submitted at the end of the semester which is evaluated for 30 marks.

b) A minimum of 25 (50%) marks are to be secured exclusively in the Continuous Internal Evaluation (CIE) in order to be declared as passed in the Term Paper and eligible to write the SEE in the Term Paper.

c) The Semester End Examination (SEE) shall be conducted for 50 marks by one internal and one external examiner appointed by the Principal. The SEE contains Viva-voce and the demonstration of the model developed or work performed as a part of the term paper.

d) A minimum of 20 (40%) marks shall be obtained in SEE of the term paper in order to be declared as passed and for the award of the grade in the term paper.

5.6 Evaluation of the Project

a) In case of the Project work, the evaluation shall be based on CIE and SEE. The CIE for 50 marks consists of a minimum of two Seminars / presentations for 20 marks and the Project Report submitted at the end of the semester which is evaluated for 30 marks.

b) A minimum of 25 (50%) marks are to be secured exclusively in the Continuous Internal Evaluation (CIE) in order to be declared as passed in the Project Work and eligible to write the SEE in the Project Work.

c) SEE shall be evaluated in the form of a Viva- voce and the demonstration of the thesis work for 100 marks. Viva-voce Examination in Project Work shall be conducted by one internal examiner and one external examiner to be appointed by the Principal.

d) A minimum of 40 marks shall be obtained in SEE exclusively in order to be declared as passed in the Project and for the award of the grade.

NOTE : A student who is absent for any Test / Exam / Seminar / Presentation as a part of Continuous Internal Evaluation (CIE), for any reason whatsoever, shall be deemed to have scored zero marks in the respective component and no provision for make-up shall be provided.

5.7 Course Repetition (Repeater course)

The students not qualified to write SEE in a course may register for the repeater courses through course repetition and summer semester. The students have to apply to the Principal through the respective HOD by paying prescribed fees.

Course repetition: A student can take up a maximum of two theory courses in a semester immediately after the semester end examinations of that particular semester in accordance with the guidelines recommended by the Academic Council. The students who are not taking regular semester courses may additionally register for one more theory course.

Summer semester: Further the students can register maximum three (theory + lab courses together) courses in the summer semester. Summer semester courses shall be of both even & odd semesters. Summer semester shall be conducted immediately after completion of even semester end examinations.

The HODs concerned have to allot a teacher related to that course to conduct class work. The minimum number of periods to be conducted should not be less than 75% of the total prescribed periods for that course. The classes will be conducted in the vacation period or in the weekends or in the afternoons as decided by the HOD concerned. Teacher has to evaluate the student for his performance in CIE as per the autonomous norms and the qualified students should appear for a semester end examination. The pass criteria in both CIE & SEE should be as per autonomous norms.

The documents for monitoring the candidates registered for course repetition are available with the Heads of the Departments and Exam Section.

6.0   ATTENDANCE REGULATIONS:

All students shall maintain a minimum attendance of 75% in each course registered. The attendance percentage is computed by considering total number of periods conducted in a course as the denominator and the total number of periods actually attended by the student in that course, as the numerator.

In case of shortfall in this, the Principal of the College shall consider and may condone deficiency up to a limit of 10% in special cases for reasons such as medical emergencies, participation in sport, cultural activities, seminars, workshops and paper presentation etc. at the level of University, State, and National after due recommendation by the concerned Head of the Department.

For the above cases student must take prior permission from the head of the department to participate in such events and in case of medical emergencies intimation should be given immediately and submit the medical certificate to the concerned Head of the Department. Any student failing to meet the above standard of attendance in any course(s) registered, shall not be allowed to appear for SEE of such course(s). The student seeking condonence of attendance on the above grounds has to pay the condonence fee as specified by the college.

Further a student, who could not satisfy the minimum attendance of average 75% in all the courses put together (or 65% in special cases as mentioned above) in any semester, is not eligible to appear for the Semester End examinations and shall have to repeat that semester in the subsequent year.

6.1 Attendance at CIE and SEE: Attendance at all examinations, both CIE and SEE of each course registered shall be compulsory for the students and there shall not be any provision for re-examinations/consideration.

6.2 Any student against whom any disciplinary action by the College is imposed shall not be permitted to attend any SEE in that Semester.

6.3 The basis for the calculation of the attendance shall be the period prescribed by the College by its calendar of events. For the first semester students, the same is reckoned from the date of admission to the course.

6.4 The students shall be informed about their attendance position periodically by the College so that the students can strive to make up the shortage. However, non-receipt of such information from the college will not be considered as valid reason for exemption from the attendance requirements.

6.5 If a student does not fulfil the attendance requirements in any subject, he/she is not permitted to attend the Semester End Examination in that subject and is deemed to have been awarded "F' grade in that subject.

7.0 DETENTION: A student is said to have been detained and not allowed to appear for Semester End Examination (SEE) at the end of the semester when

7.1 The student does not have a minimum average 75% attendance or 65% attendance with condonation in all subjects put together in that semester.

7.2 Such a student shall have to repeat the same semester subsequently and satisfy the above requirements afresh to become eligible to appear for the Semester End Examination (SEE), conducted at the end of the semester.

8.0 CONDITIONS FOR PROMOTION:

8.1 A student not detained in the first semester of a year of study shall be promoted to second semester of that year of study.

8.2 A student shall be eligible for promotion to III semester of B.Tech. Programme, if he/she is not detained in the second semester (of first year B.Tech. Programme) irrespective of the number of backlog courses (in terms of credits not earned) in I year B.Tech. (i.e. I & II semesters together).

8.3 A student shall be eligible for promotion to V semster of B.Tech. Programme, if he/she is not detained in the IV semester and also must secure 50% of the credits of the subjects (including laboratory courses, MOOC courses etc as per curriculum) that have been studied in I & II semesters irrespective of whether the candidate takes the end examination or not as per the normal course of study. At the time of commencement of class work for the V semester, student must secure the required credits.

8.4 A student shall be eligible for promotion to VII semester of B.Tech. Programme, if he/she is not detained in the VI semester of B.Tech. Programme and also must secure 50% of the credits of the subjects (including laboratory courses, MOOC courses etc as per curriculum) that have been studied upto IV semester. At the time of commencement of class work for the VII semester, student must secure the required credits.

And in case of getting detained for shortage of earned credits as per above, the student may make up the credits through supplementary exams for the failed courses before the date of commencement of class work for V or VII semester respectively.

7.0 Reregistration of not qualified courses in CIE for lack of attendance or lack of marks:

Students who failed to secure minimum attendance (75%) and minimum percentage of marks (50%) in CIE specified in any course, he / she will not be allowed to write SEE of that course. Such students have to register and qualify in CIE for those courses through course repletion and summer semester.

Students, who failed after final regular examination (SEE), must appear for the supplementary examinations to be conducted as per the college examination schedule.

Registration: Every eligible student has to register himself / herself at the beginning of every semester indicating all the Courses taken up for pursuit by him / her during that Semester and mentor's signature is mandatory.

8.1 When a student is debarred for one or more semesters, his / her registration in the present semester is cancelled and the student is debarred from registering in future during the debarred period.

8.2 In any case, while re-registering in any semester, he or she will have to pay the requisite fee once again.
For extended years of study, students must pay the tuition fees as per the college regulations.

9.0 GRADING SYSTEM

Based on the student performance during a given semester, a final letter grade will be awarded at the end of the semester for each course.

Letter Grades: A letter grade is basically a qualitative measure (an alphabet/letter) giving the performance of a student, such as,

Performance	Grade
Extraordinary	A+
Excellent	A
Very Good	B+
Good	B
Average	C
Pass	P
Unsatisfactory/Fail	F

The above grades are based on the marks obtained by the student in both CIE and SEE.

9.1 Grade Points

Depending on the letter grades assigned, a student earns certain grade points. The Colleges follow the 10-point grading system, as given below for absolute grading system.

The letter grades and the corresponding grade points are as given in the Table.

Table: Grades & Grade Points

Grade	Grade Points	% of Marks
A+	10	≥90% – 100%
A	9	≥80% –< 90%
B+	8	≥70% – <80%
B	7	≥60% – <70%
C	6	≥50% –< 60%
P	5	≥45% – <50%
F(Fail)	0	< 45%

9.1.1 The grade points given in above tables help in the evaluation of credit points earned by the student in a Course as the credit points are equal to the number of credits assigned to the Course multiplied by the grade points awarded to the student in that Course. This shall be used in arriving at the Semester Grade Point Average (SGPA) of the student for that semester, as it is the sum of all the credit points earned by the student for all the Courses registered in that semester.

9.1.2 Earning of Credit: A student shall be considered to have completed a Course successfully and earned the credits if he/she secures an acceptable letter grade in the range A+ to P. Letter grade 'F' in any Course implies failure of the student in that Course and no credits earned.

9.2 A student who earns a minimum of 5 grade points (P grade) in a course is declared to have successfully completed the course, and is deemed to have earned the credits assigned to that course.

However it should be noted that a pass in any course/term paper/Project shall be governed by the rules mentioned Assessment and Examination Policy.

10.0 GRADE POINT AVERAGE

10.1 The Grade Point Average (GPA) will be calculated according to the formula:

$$GPA = \frac{\sum C_i G_i}{\sum C_i}$$

Where C_i = number of credits for the course i,

G_i = grade points obtained by the student in the course.

10.2 Semester Grade Point Average (SGPA) is awarded to candidates considering all the courses of the semester. Zero grade points are also included in this computation.

10.3 To arrive at Cumulative Grade Point Average (CGPA), the formula is used considering the student's performance in all the courses taken in all the semesters completed up to that particular point of time.

10.4 Example

Semester	Course Code.	Credits	Grade	Grade Point	Credit Points	SGPA	CGPA
III	18EC301	3	C	6	18		
III	18EC302	3	B	7	21		
III	18EC303	3	A	9	27		
III	18EC304	4	P	5	20		
III	18EC305	4	C	6	24		
III	18EC306	2	B+	8	16	6.72	6.72
III	18ECL301	1	P	5	5	(148/22)	(148/22)
III	18ECL302	1	B	7	7		
III	18ECL303	1	A+	10	10		
Total		**22**			**148**		
IV	18EC401	3	P	5	15		
IV	18EC402	3	B	7	21		
IV	18EC403	4	A+	10	40		
IV	18EC404	4	C	6	24		
IV	18EC405	2	A	9	18	7.40	7.06
IV	18EC406	3	B+	8	24	(163/22)	(311/44)
IV	18ECL401	1	P	5	5		
IV	18ECL402	1	C	6	6		
IV	18ECL403	1	A+	10	10		
Total		**22**			**163**		

11.0 ELIGIBILITY FOR AWARD OF B.TECH. DEGREE: A student shall be eligible for award of the B.Tech degree if he/she fulfils all the following conditions:

1) Registered and successfully completed all the components prescribed in the Programme of study to which he/she is admitted
2) Obtained CGPA greater than or equal to 6.0 (Minimum requirements for Pass)
3) Has no dues to the Institute, hostels, Libraries, NCC/NSS etc., and
4) No disciplinary action is pending against him/her

12.0 AWARD OF CLASS: A candidate who becomes eligible for the award of B.Tech. Degree shall be placed in one of the following Classes based on CGPA.

Table: CGPA required for award of Degree

Distinction	≥ 8.0*
First Class	≥ 6.5 < 8.0
Second Class	≥ 5.5 < 6.5
Pass Class	< 5.5

* In addition to the required CGPA of 8.0, the student must have necessarily passed all the courses of every semester **in the minimum stipulated period for the Programme**.

If the student did not obtain a CGPA of 6.0 after completing all courses of study, he/she should repeat some courses and obtain higher grade till his/her CGPA is 6.0. Unless he/she obtains a CGPA of 6.0, degree will not be awarded.

12.1 Grade Sheet: A grade sheet (Memorandum) will be issued to each student indicating his performance in all courses taken in that semester and also indicating the Grades and SGPA.

12.2 Transcripts: After successful completion of the total Programme of study, a Transcript containing performance of all academic years will be issued as a final record. Duplicate transcripts will also be issued if required after the payment of requisite fee. Partial transcript will also be issued up to any point of study to any student on request and by paying the stipulated fee in force.

12.3 The Academic council of the College approves and recommends the same to Acharya Nagarjuna University for the award of a degree to any student.

13.0 IMPROVEMENT OF CLASS:

13.1 A candidate, after becoming eligible for the award of the Degree, may reappear for the Final Examination in any of the theory courses as and when conducted, for the purpose of improving the class. But this reappearance shall be only once and within a period of two academic years after becoming eligible for the award of the Degree.
However, this facility shall not be availed by a candidate who has taken the Original Degree Certificate. Candidates shall not be permitted to reappear either for CIE in any course or for Semester End Examination (SEE) in laboratory courses (including Project Viva-voce) for the purpose of improvement.

14.0 SUPPLEMENTARY EXAMINATIONS: In addition to the Regular Final Examinations held at the end of each semester, Supplementary Final Examinations will be conducted during the academic year. Candidates taking the Regular / Supplementary examinations as Supplementary candidates may have to take more than one Final Examination per day.

15.0 INSTANT SUPPLEMENTARY EXAMINATIONS: Candidates who fail in one theory course of VIII semester can appear for Instant Supplementary Examination conducted after declaration of the revaluation results of the said exam.

16.0 MALPRACTICES:

The Principal shall refer the cases of malpractices in Continuous Internal Evaluation (CIE) and Semester End Examination (SEE) to an Enquiry Committee constituted by him / her. The Committee will submit a report on the malpractice allegedly committed by the student to the Principal. The Principal along with the members of the Committee is authorized to award a punishment as per the norms, if the student is found guilty.

16.1 To prevent the students indulging in Malpractices through latest electronic gadgets such as Cell-phones, Pagers, Organizer PDAs and Palmtops in addition to chits, printed material etc. in the examination halls, students shall be thoroughly checked at the main entrance as well as in the examination halls by the invigilators. The senior staff members appointed as internal flying squad has greater and decisive role to play in this regard.

16.2 A notice displaying the 'SCALE OF PUNISHMENT' shall prominently be displayed at the Main Entrance to the Examination Halls, preferably near the 'Seating Plan Display'.

16.3 If any student is found resorting to malpractice, the matter shall immediately be brought to the notice of Chief/Additional chief superintendent, Flying squad by the invigilator concerned.

16.4 The above staff members will then prepare a detailed report on the spot in proforma-I (copy enclosed) of the case. The full details of the offence and the details of supporting material must be written in establishing the case. The residential addresses of the students involved in malpractice shall be noted with contact telephone numbers in the malpractice report.

16.5 A written statement is to be obtained from the candidate. If any candidate refuses to give the written statement, the same shall be recorded by the invigilator with the signature of another invigilator as witness.

16.6 Whatever be the supporting material for establishing the case of malpractice, the same are to be confiscated immediately for sending the same to the Malpractices prosecuting committee as a proof.

16.7 The supporting materials so confiscated shall be signed by the chief superintendent and flying squad/invigilator and shall be attached and tagged properly to the scripts of the malpractice cases and are to be sent toMalpractices prosecuting committeealong with the report (proforma enclosed).

16.8 Any representation to relax the punishment will not be entertained by Malpractices prosecuting committee.

16.9 The answer scripts of the candidates who resorted to mal-practice shall be packed in a separate sealed cover duly subscribing on the cover as "MAL-PRACTICE" and send the same to Malpractices prosecuting committee.

16.10 Any student who is arrogant and does not follow the examination rules shall be sent out of the examination hall after collecting his question paper and answer book. Complaints on such cases shall be lodged to the Principal irrespective of imposter is an examinee or an outsider.

SCALE OF PUNISHMENT FOR MAL-PRACTICE CASES

Rule No.	Nature of Offence	Scale of Punishment
01	Writing unparliamentary / vulgar / obscene / words or Language in the answer book. OR Refusing to obey instructions of Chief Superintendent / Invigilator.	The performance of the candidates in that subject shall be cancelled. Further the case should be referred to the disciplinary committee by Chief Superintendent / Malpractices prosecuting committee. If the student repeat the same offence, the performance of the candidate in the semester examination in ALL SUBJECTS (whole/part examination, as the case may be, including Practicals) shall be cancelled
02	A candidate found in possession of any relevant material pertaining to the day of examination such as Papers, Books, Notes OR Notes written on any part of the clothes dressed by the candidate or any part of his/her body or any part of Table or Desk; OR Foot rule, instruments like setsquare, protractor, calculator, mobile phones, etc., with notes written on them. OR Mass copying at the examination centre detected during the conduct of examination or during valuation.	The candidate is to be sent out of the examination hall immediately after obtaining his/her written explanation and duly confiscating his/her Hall-ticket. He/she shall be allowed to appear for the remaining subjects in that examination by obtaining duplicate hall ticket. The performance of the candidates in that subject shall be cancelled. Further depending on severity of offence or reoccurrence of the offence by the student, the Malpractices prosecuting committee may impose the cancellation of performance of the candidate in two or more or ALL SUBJECTS (whole/part examination, as the case may be, including Practicals) in that semester examination.
03	A candidate found having copied or indulging in copying from any paper, book or notes or any other source or allowed or is found allowing any other candidate to	The candidate is to be sent out of the examination hall immediately after obtaining his/her written explanation and duly confiscating his/her Hall-ticket. He/she shall be allowed to appear for the remaining subjects in that examination by

	copy any matter from his/her answer book or to have in any manner rendered any assistance to another candidate, or if he/she is found to have been receiving assistance from another candidate. OR Destruction or suppression of the evidence of the forbidden material in any way like swallowing, tearing or throwing outside etc.	obtaining duplicate hall ticket. The performance of the candidates in that subject shall be cancelled. Further depending on severity of offence or reoccurrence of the offence by the student, the Malpractices prosecuting committee may impose the cancellation of performance of the candidate in two or more or ALL SUBJECTS (whole/part examination, as the case may be, including Practicals) in that semester examination.
04	Copying detected on the basis of internal evidence such as during valuation/special scrutiny	The performance of the candidates in that subject shall be cancelled. Further depending on severity of offence or reoccurrence of the offence by the student, the Malpractices prosecuting committee may impose the cancellation of performance of the candidate in two or more or ALL SUBJECTS (whole/part examination, as the case may be, including Practicals) in that semester examination. Note for MPC: "The Malpractice Prosecuting Committee which awards the punishment to the candidates involved in the malpractice has to make sure of the involvement of the Candidate/s in the offence before any punishment is awarded to the candidate/s."
05	Throwing of Question paper after writing the answers on it to the other candidate(s) with the intention to help the other candidate(s). OR Throwing / Sending the Question paper/ questions contained in the question paper on any sheet/article out during the period of examination with an intention to receive assistance and caught by the Invigilator or by an Officer involved in the conduct of examinations	The candidate is to be sent out of the examination hall immediately after obtaining his/her written explanation and duly confiscating his/her Hall-ticket. He/she shall be allowed to appear for the remaining subjects in that examination by obtaining duplicate hall ticket. The performance of the candidates in that subject shall be cancelled. Further depending on severity of offence or reoccurrence of the offence by the student, the Malpractices prosecuting committee may impose the cancellation of performance of the candidate in two or more or ALL SUBJECTS (whole/part examination, as the case may be, including Practicals) in that semester examination.
06	Exchanging intentionally the answer scripts with a view to give or take help from another examinee.	The candidates (both who helps and who takes help) are to be sent out of the examination hall immediately after obtaining his/her written explanation and duly confiscating his/her Hall-ticket. The performance of all the candidates involved in the act in all subjects in that particular year/semester examination (whole/ part examination, as the case may be, including Practicals) shall be cancelled.

07	Taking away the answer book or leaving the examination hall without handing over the answer book to the Invigilating Staff whether returned Subsequently or tearing the answer Book.	The performance of the candidate in all subjects in that semester examination (whole/part examination, as the case may be, including Practicals) shall be cancelled and shall not be permitted to appear for whole/part examination, as the case may be, for next subsequent semester examinations.
08	Writing of answers in the answer book by his/her associates in the examination hall or at any other level.	The performance of all the candidates involved in the act in all subjects in that particular year/semester examination (whole/part examination, as the case may be, including Practicals) shall be cancelled and the candidates shall not be permitted to appear for TWO subsequent semesters examinations and they shall not be permitted to study the next higher class (debarred for one semester).
09	Obstructing the Chief Superintendent from performing his/her duties, abusing, threatening and showing disrespect towards Invigilator/ Chief Superintendent/ any other official connected with the conduct of examination within the institution premises.	The culprits are to be handed over to the Police immediately and a Criminal case is to be booked against them. The performance of the candidate in the particular year/ semester examination in ALL SUBJECTS (whole/part examination, as the case may be, including Practicals) shall be cancelled and the candidates shall not be permitted to appear for TWO subsequent semesters examinations and they shall not be permitted to study the next higher class (debarred for one semester).
10	Substitution of answer book. OR Insertion of drawing sheets or replacement of main answer book written outside with one written inside the examination hall.	The performance of the candidate in all subjects in that semester examination (whole/ part examination, as the case may be, including Practicals) shall be cancelled and the candidate shall not be permitted to appear for TWO subsequent examinations and he/she is not permitted to study next higher class (debarred for one semester).
11	Impersonation.	The performance of both the candidates, i.e., the impostor and the candidate, who is being impersonated, in all subjects in that semester examination (whole/ part examination, as the case may be, including Practicals) shall be cancelled and they are not permitted to study and appear for any examination for the next THREE semesters (including academic year in which the impersonation has taken place) in respect of either or both the candidates. A Criminal case may be lodged in the Police Station if the impostor is an outsider
12	Physical assault within the institution premises on personnel connected with the conduct of examinations.	The performance of the candidate in all the subjects in that semester examination (whole/part examination, as the case may be, including Practicals) shall be cancelled and the

		candidate shall not be permitted to appear for THREE subsequent examinations and he/she is not permitted to study next higher class (debarred for two semester), if any, till he/she completes the punishment period. A Criminal / Disciplinary case is to be booked against the culprits involved in the act.
13	Possession of blank main answer book/ additional answer book/ drawing sheet/ graph sheet which have not been issued in the Examination hall on the day of exam.	A Criminal / Disciplinary case is to be booked against the candidate. The matter should be brought to the notice of the authorities for initiation of appropriate action against all the guilty. The performance of the candidate in all subjects in that semester examination (whole/part examination, as the case may be, including Practicals) shall be cancelled.
14	Other offences, if any, not covered under the above provisions.	The Malpractice Prosecuting Committee shall make specific recommendations on the punishment to be awarded keeping in view the gravity of offence and also the scale of punishment, as above.

N O T E :

1. No re-examination shall be conducted, where candidates resort to boycott of examinations on any pretext.

2. In case a candidate resorting to malpractice by copying from any material in his/her possession and/or by any means is caught by the Flying Squad or Observers or any other Officer posted for duty for the examination, the explanation of the Invigilator in that particular hall of examination shall be called for, for not detecting the same and appropriate disciplinary action be initiated against him/her, after examining his/her explanation in the matter.

3. In all the malpractice cases the report made by the Invigilators should be thoroughly enquired into by the Chief Superintendent concerned and he/she should satisfy himself/herself with all the details in the Invigilators report and record the same in his/her report.

4. In cases where there is a laxity on the part of invigilators and chief superintendents and other officials connected with the conduct of examinations in the discharge of their duties properly, such as in cases where mass copying is reported in an examination hall or where the candidate involved in malpractice in an examination hall is booked by flying squad or others but not the invigilator, then appropriate disciplinary action should be taken against all the staff members involved, after giving them notice and considering their explanations, if any, offered.

5. Punishment for different offences committed in all cases and its duration is mentioned above. It is quite possible that in few cases, the punishment recommended to the candidates, may exceed, the validity of the Curriculum in existence. In such cases, the punishment period should be limited to that extent within which the candidate has to obtain his/her B.Tech. In certain cases, the candidate may not get any more chances to appear for examination and qualify for the award of B.Tech. The candidate will have to suffer the consequence for his/her misdemeanor.

6. In all cases of Malpractice, the hall ticket of the candidate is to be confiscated and shall be sent to the Malpractices prosecuting committee along with the answer script in separate cover. The candidate shall not be permitted to appear for the remaining subjects if any, in that examination.

BAPATLA ENGINEERING COLLEGE:: BAPATLA
(Autonomous)

PROFORMA - I

BAPATLA ENGINEERING COLLEGE:: BAPATLA
(Autonomous)

MAL-PRACTICE CASE REPORT

1. Examination Hall : _____

2. Date of Examination : _____

3. Time of Examination : _____

4.a) Course : _____

   b) Year/Semester : _____

   c) Scheme : _____

5. Subject in which candidate is booked:
   a) Subject Code : _____

   b) Subject : _____

6. Particulars of the candidate booked:
   a) Regd. No. : _____

   b) Name : _____

   c) Residential address : _____

   : _____

   : _____

7. (a) Case booked by : Invigilator / Squad Members / Surprise Check Squad / Other Invigilator / Chief superintendent / Examination officers (Strike out whichever is not applicable)

   (b) Name & Designation of the : _____
   Staff who booked the case
   (c) Name & Designation of the : _____

   Other invigilators in the Hall : _____

   as witness. : _____

8. Give Full Details of the Offence : _____

   _____

   _____

   _____

   _____

   _____

9. Give full details of Supporting material like Written Chits, Printed material, Mobile Phones, Books, Matter written on Scale, Calculator case etc., (matter should be related to the subject of examination on that day). If copied, the copied matter is to be marked in the supporting material and write Regd. No. of the candidate on the supporting material and should be sent to this office along with the answer booklet.

11. Signature of the Invigilator   : _____
    (whether the case is booked by him or by other officials)

12. Whether the student has given :   YES / NO
    the statement or not ?

13. Signature of the candidate   : _____

14. Remarks of the   : _____

    Chief Superintendent   _____

                                     _____

                                     _____

SIGNATURE OF THE CHIEF SUPERINTENDENT

Encl: 1) Answer-script
     2) Forbidden confiscated material
     3) Statement of Student.

17.0 AMENDMENTS TO REGULATIONS:

The Academic Council of Bapatla Engineering College (Autonomous) reserves the right to revise, amend, change or nullify the Regulations, Schemes of Examinations, and/ or Syllabi or any other matter pertained that meets to the needs of the students, society and industry without any notice and the decision is final.

DISCIPLINE AND CODE OF CONDUCT FOR STUDENTS

The following are some of the important rules of discipline. All students are required to be aware of and act consistently with these values.

1. Students must punctually attend all lectures, practicals, tutorials, assignments, tests, examinations, etc. A student whose attendance and/or progress in the various tests and examinations are not satisfactory and who does not perform the required number of assignments, tutorials and/or practicals are likely to lose their terms. Prolonged absence even on ground of ill health may also lead to loss of terms. Defaulters will not be sent up for Final /University Examinations.

2. The identity card is meant for identifying bonafide students and is used for permitting the students to participate in various activities and programs of the college. Every student must wear Identity card as long as he/she is in the college campus. It must be produced by the student whenever demanded by the member of the teaching or non-teaching staff of the college. Every student must wear his/her Identity card in the college every day. He/She must take proper care of it to avoid its misuse by other students and outsiders. In case the Identity card is lost, the matter should be immediately reported to the Principal and an application should be made for a duplicate Identity card, which will be issued on payment of charges.

3. The conduct of the students in the classes and in the premises of the college shall be such as will cause no disturbance to teachers, fellow students or other classes.

4. Every student shall wear a clean formal dress while coming to the college also when representing the college for various activities out station.

5. No Society or Association shall be formed in the College and no person should be invited in the college campus without the specific permission of the Principal.

6. No student is allowed to display any Notice/Circular/Poster/Banner in the College premises without the prior permission of the Principal.

7. Using foul language in the college campus is prohibited. If any student is caught using foul language, disciplinary action shall be initiated against the student.

8. Use of **BEC name tag or logo** by the students for their caste, political, religious, personal reasons is prohibited. Further placing banners on caste, political, religious, personal reasons, promoting cinema heroes & political leaders, taking possessions and burning fire crackers in front of the college is strictly prohibited. If any student is involved in such activities in and around the campus, severe disciplinary action will be taken including rusticating from the college and filing a criminal case.

9. Outsiders are not permitted in the college premises without the prior permission of the Principal. College students are not allowed to bring their relatives/friends to the college premises without the permission of the principal.

10. All meetings, cultural programs, debates, elocutions etc. organized on the college premises must be held in presence of teaching staff members and with the prior permission of the Principal. The subjects of debates/elocutions must have the prior approval of the principal.

11. Conducting fresher's meet, farewell meets etc. by the students outside the campus are prohibited. If any student is involved in such activities (organizing as well as participating), severe disciplinary action will be taken including rusticating from the college.

12. Students must take proper care of the college property. Strict action will be taken against students damaging College property and will be required to compensate the damage.

13. Students should not be involved in academic offences including cheating or plagiarism in academic course work malpractices at the College/Board/University Examinations

14. Smoking is strictly prohibited in the college premises.

15. If, for any reason, the continuance of a student in the College is found detrimental to the best interest of the college, the Management may ask the student to leave the college without assigning any reasons and the decision will be final and binding on the student.

16. Playing music on Transistors, Tape-Recorders, Car Stereos, Mobile phones or any other similar gadgets with or without earphones is strictly prohibited in the college premises. Defaulters will be punished and their instrument shall be confiscated.

17. Use of Mobile phones is strictly prohibited in the academic area of the college, Defaulters will be penalized and their instrument confiscated.

18. Students who are travelling to college on personal vehicles (2/4 wheelers) need to have valid driving license issued by RTO and follow all the rules listed by RTO. Students have to park the vehicle in the parking area of the college.

19. Students must not hang around in the college premises while the classes are at work.

20. Students must not attend classes other than their own without the permission of the authority concerned.

21. Students shall do nothing inside or outside the college that will interface with the discipline of the college or tarnish the image of the college.

22. Students are not allowed to communicate any information about college matters to Press.

23. Matters not covered above will be decided at the discretion of the Principal.

Acts of misbehavior, misconduct, indiscipline or violation of the Rules of Discipline mentioned above liable for one more punishments as stated below:
   A. Warning to the students.
   B. Warning to the student as well as inform the parents.
   C. Imposition of a fine.

D. Denial of gymkhana, library, laboratory, N.C.C., N.S.S. student aid or any other facility for a specified period or for the whole Term/Year.
E. Expulsion from College for a specified period
F. Cancellation of Terms.
G. Refusal of admission in the term or academic year.
H. Cancellation of admission.
I. Rustication.

Anti Ragging Rules and Regulations
(As per AICTE Norms)

1. **What constitutes Ragging: -** Ragging constitutes one or more of any of the following acts:

a. any conduct by any student or students whether by words spoken or written or by an act which has the effect of teasing, treating or handling with rudeness a fresher or any other student;

b. indulging in rowdy or undisciplined activities by any student or students which causes or is likely to cause annoyance, hardship, physical or psychological harm or to raise fear or apprehension thereof in any fresher or any other student;

c. asking any student to do any act which such student will not in the ordinary course do and which has the effect of causing or generating a sense of shame, or torment or embarrassment so as to adversely affect the physique or psyche of such fresher or any other student;

d. any act by a senior student that prevents, disrupts or disturbs the regular academic activity of any other student or a fresher;

e. exploiting the services of a fresher or any other student for completing the academic tasks assigned to an individual or a group of students.

f. any act of financial extortion or forceful expenditure burden put on a fresher or any other student by students;

g. any act of physical abuse including all variants of it: sexual abuse, homosexual assaults, stripping, forcing obscene and lewd acts, gestures, causing bodily harm or any other danger to health or person;

h. any act or abuse by spoken words, emails, posts, public insults which would also include deriving perverted pleasure, vicarious or sadistic thrill from actively or passively participating in the discomfiture to fresher or any other student;

i. any act that affects the mental health and self-confidence of a fresher or any other student with or without an intent to derive a sadistic pleasure or showing off power, authority or superiority by a student over any fresher or any other student.

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

1. The punishment to be meted out to the persons indulged in ragging has to be exemplary and justifiably harsh to act as a deterrent against recurrence of such incidents.

2. Every single incident of ragging a First Information Report (FIR) must be filed without exception by the institutional authorities with the local police authorities.

3. The Anti-Ragging Committee of the institution shall take an appropriate decision, with regard to punishment or otherwise, depending on the facts of each incident of ragging and nature and gravity of the incident of ragging.

4. a) Depending upon the nature and gravity of the offence as established the possible punishments for those found guilty of ragging at the institution level shall be any one or any combination of the following:-

   (i) Cancellation of admission
   (ii) Suspension from attending classes
   (iii) Withholding/withdrawing scholarship/fellowship and other benefits
   (iv) Debarring from appearing in any test/examination or other evaluation process
   (v) Withholding results
   (vi) Debarring from representing the institution in any regional, national or international meet, tournament, youth festival, etc.
   (vii) Suspension/expulsion from the hostel
   (viii) Rustication from the institution for period ranging from 1 to 4 semesters
   (ix) Expulsion from the institution and consequent debarring from admission to any other institution.
   (x) Collective punishment: when the persons committing or abetting the crime of ragging are not identified, the institution shall resort to collective punishment as a deterrent to ensure community pressure on the potential raggers.

Important Contact Numbers (In case of Ragging)

Sl.No.	Member Category	Name of the Member	Phone No
1.	Principal	Dr. V. Damodara Naidu, M.Tech., Ph.D.	8332857027
2.	**HODs:** Chemical Engg. Civil Engg. CSE ECE EEE EIE IT Mechanical Engg. M.C.A. Mathematics Physics Chemistry English T& P Warden, Campus Hostel Coordinator for anti ragging	Dr. J.S.Rao, M.Tech., Ph.D. Dr. Ch.Naga Satish Kumar, M.Tech., Ph.D. Dr. Shaik Nazeer, M.Tech., Ph.D., Dr. B. Chandramohan, M.Tech., Ph.D. Dr. N.Rama Devi, M.Tech.,Ph.D., Prof. Ch.Ramesh M.Tech., (Ph.D.) Prof. N.Sivarama Prasad, M.Tech.,(Ph.D.) Dr. T.Nanacharaiah, M.Tech., Ph.D. Sri. K.N.Prasad, M.C.A.,M.Tech., Dr. P.VijayaSaradhi, M.Sc.,M.Phil.,Ph.D. Dr. K.Rama Krishna, M.Sc., Ph.D. Dr. V.Madhava Rao, M.Sc., Ph.D. Dr. P.Asha Madhavi, M.A.,M.Phil.,Ph.D. Mr. Justin Chako Dr. T.Chandrasekhara Rao Mr. Y. Narendra	9490224100 9440110124 9642302577 9491112477 9703374075 9701407595 9885882200 9492715018 8121708069 9949559288 9441207751 8374498399 9951507742 9845787354 9848276672 9704090941
4.	Police Department	Crime Stopper SP, Guntur Rural SP Camp Office DSP, Bapatla CI, Bapatla Town CI, Bapatla Rural PS, Bapatla Town SI, Bapatla Rural **Anti-Ragging Toll Free**	1090 9440796200 08632234828 9440796165 9440796171 9440796221 08643-224036 9440796258 **18004255314**

BAPATLA ENGINEERING COLLEGE :: BAPATLA

(Autonomous)

BAPATLA ENGINEERING COLLEGE (AUTONOMOUS)
ACADEMIC CALANDER
ACADEMIC CALANDER FOR I & II B.TECH CLASSES
FOR THE ACADEMIC YEAR - 2019-20

I B.TECH. CLASSES

DESCRIPTION	I SEMESTER	II SEMESTER
COMMENCEMENT OF SEMESTER	**05-08-2019**	**02-01-2020**
ORIENTATION PROGRAM	05-08-2019 TO 17-08-2019	---
COMMENCEMENT OF CLASS WORK	19-08-2019	02-01-2020
FIRST MID-TERM EXMINATIONS	15-10-2019 TO 19-10-2019	26-02-2020 TO 02-03-2020
LAST INSTRUCTION DAY	07-12-2019	20-04-2020
SECOND MID-TERM EXAMINATIONS	09-12-2019 TO 13-12-2019	22-04-2020 TO 26-04-2020
PREPARATION HOLIDAYS	14-12-2019 TO 18-12-2019	27-04-2020 TO 01-05-2020
PROPOSED DATE OF SEMESTER END EXAMINATIONS	19-12-2019 TO 31-12-2019	02-05-2020 TO 15-05-2020

II B.TECH. CLASSES: -

DESCRIPTION	I SEMESTER	II SEMESTER
COMMENCEMENT OF CLASS WORK	**24.06.2019**	**02.12.2019**
FIRST TERM EXMINATIONS	04.09.2019 - 11.09.2019	03.02.2020 - 08.02.2020
LAST INSTRUCTION DAY	02.11.2019	28.03.2020
SECOND TERM EXAMINATIONS	04.11.2019 - 09.11.2019	30.03.2020 - 04.04.2020
PREPARATION HOLIDAYS	10.11.2019 - 13.11.2019	05.04.2020 - 08.04.2020
SEMESTER END EXAMINATIONS	**14.11.2019 - 30.11.2019**	**09.04.2020 - 25.04.2020**

Dasara Vacation   :   06.10.2019   to   13.10.2019
Pongal Vacation   :   12.01.2020   to   19.01.2020

Commencement of class work for the academic year 2020-21 for II & III B.Tech: 15.06.2020

P R I N C I P A L

Library resources, facilities & services

The Central Library of Bapatla Engineering College, one of the biggest Libraries in the state with 22,000 Sq feet has been playing a vital role as information centre catering to the academic and learning needs of the students & faculty. The Library received Best Library Award Four times from Acharya Nagarjuna University.

Library Timings: The Central Library functions from 7AM to 7 PM on all working days.

Resources: As a knowledge bank, the Central Library of BEC has a rich collection of 75,317 books, 523 online International technical journals (Science Direct-275 ,IEEE-ASPP-183 ,ASME- 30 ,ASCE-35) and 120 print journals.

Library Automation: The Library catalogue of books (OPAC) & Circulation of Books (Issue & Return of Books) have been fully computerized with SOUL Library Software & Bar coding system for well maintenance and effective functioning of the Library.

Circulation of Books: All the students are allowed to borrow 2 books per head from the Library on their borrower tickets for a period of one week. Students are required to pay fine for the late return of books as per the Library rules.

Reference book service: A separate reference section is maintained in the Central Library with a stack of 14,970 books including encyclopedias, subject hand books & reference text books.

Issue of reference text books: Students may borrow the reference text books half an hour before closing the Library and return the same by 7.30 AM in the next day.

Book Bank facility: A Book Bank is maintained in the Central Library with 20,634 text books for the benefit of SC, ST & BC category students. All SC & ST category students (scholarship holders) are eligible to borrow 12 books per head from Book Bank for each semester. BC category students are allowed to borrow 2 books per head from Book Bank for each semester.

No Dues Certificate: The student who completed the course of study in the College should get a no dues certificate from the Library by returning all the tickets& books borrowed from the College Library & Book Bank.

Library staff: The Central Library has 08 well experienced staff including the Librarian having more than 10 to 25 years of working experience.

Digital Library: A separate Digital Library is maintained in the Central Library with the infrastructure of 28 computers and 3,237 educational CDs. The Digital Library provides internet facility to the students and faculty.

Students can access the full text of the following e resources in the Digital Library.

- International e journals (Science Direct, IEEE, ASME & ASCE)
- NPTEL Video courses developed by all IITs. (Total 236 Courses - 9,173 Lessons)
- e – books and e – journals of DELNET Digital Library

Xeroxing facility: The Library is providing reprographic facility to students to disseminate material quickly and cost effectively at 50ps. per copy.

Bapatla Engineering College (Autonomous) :: BAPATLA

DEPARTMENT OF …………………………..

Academic Year 2019-2020

Schedule for Class Work (*w.e.f. 19-08-2019*)

SEMESTER - I

(Commencement of class work: 19-8-2019)

DAY/TIME	7.30 to 8.15	8.15 to 9.00	9.00 to 9.45	9.45 to 10.30	10.30 to 11.00	11.00 to 11.45	11.45 to 12.30	12.30 to 1.15
MON								
TUE								
WED					Break			
THU								
FRI								
SAT								

Subjects & Staff

SUJECT CODE	FACULTY NAME	PHONE NO	SUJECT CODE	FACULTY NAME	PHONE NO
S1			S6		
S2			L1		
S3			L2		
S4			L3		
S5					

DEPARTMENT OF …………………………..
Academic Year 2019-2020
Schedule for Class Work (*w.e.f. 02-01-2020*)

SEMESTER - II

(Commencement of class work: 02-01-2020)

DAY/TIME	7.30 to 8.15	8.15 to 9.00	9.00 to 9.45	9.45 to 10.30	10.30 to 11.00	11.00 to 11.45	11.45 to 12.30	12.30 to 1.15
MON								
TUE								
WED					Break			
THU								
FRI								
SAT								

Subjects & Staff

SUJECT CODE	FACULTY NAME	PHONE NO	SUJECT CODE	FACULTY NAME	PHONE NO
S1			S6		
S2			L1		
S3			L2		
S4			L3		
S5					

Bapatla Engineering College (Autonomous) :: BAPATLA

DEPARTMENT OF …………………………..

Academic Year 2019-2020

Schedule for Class Work (*w.e.f. 24-06-2019*)

SEMESTER - III

(Commencement of class work: 24-6-2019)

DAY/TIME	7.30 to 8.15	8.15 to 9.00	9.00 to 9.45	9.45 to 10.30	10.30 to 11.00	11.00 to 11.45	11.45 to 12.30	12.30 to 1.15
MON								
TUE								
WED					Break			
THU								
FRI								
SAT								

Subjects & Staff

SUJECT CODE	FACULTY NAME	PHONE NO	SUJECT CODE	FACULTY NAME	PHONE NO
S1			S6		
S2			L1		
S3			L2		
S4			L3		
S5					

Bapatla Engineering College (Autonomous) :: BAPATLA

DEPARTMENT OF …………………………..

Academic Year 2019-2020

Schedule for Class Work (*w.e.f. 02-12-2019*)

SEMESTER - IV

(Commencement of class work: 02-12-2019)

DAY/TIME	7.30 to 8.15	8.15 to 9.00	9.00 to 9.45	9.45 to 10.30	10.30 to 11.00	11.00 to 11.45	11.45 to 12.30	12.30 to 1.15
MON								
TUE								
WED					Break			
THU								
FRI								
SAT								

Subjects & Staff

SUJECT CODE	FACULTY NAME	PHONE NO	SUJECT CODE	FACULTY NAME	PHONE NO
S1			S6		
S2			L1		
S3			L2		
S4			L3		
S5					

Notes

Notes

Notes

Bapatla Engineering College:: Bapatla
(Autonomous)

Department of
Computer Science and Engineering

R18 Regulations

Course Structure

&

Syllabus For
1st & 2nd Year B.Tech.

Bapatla Engineering College:: Bapatla
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SCHEME OF INSTRUCTION & EXAMINATION (Semester System)
For
Computer Science and Engineering
Effective from the Academic Year 2018-2019 (R18 Regulations)
First Year B.Tech (SEMESTER – I)

Code No.	Subject	Scheme of Instruction (Periods per week)				Scheme of Examination (Maximum marks)			No. of Credits
		L	T	P	Total	CIE	SEE	Total Marks	
INDUCTION PROGRAM									
18MA001	Linear Algebra and ODE	4	0	0	4	50	50	100	3
18CY001	Engineering Chemistry	4	0	0	4	50	50	100	3
18CE001	Environmental Studies	3	0	0	3	50	50	100	2
18EL001	Communicative English	3	0	0	3	50	50	100	2
18MEL01	Engineering Graphics	1	0	4	5	50	50	100	3
18CYL01	Chemistry Lab	0	0	3	3	50	50	100	1
18MEL02	Workshop	0	0	3	3	50	50	100	1
18ELL01	English Communication Lab	0	0	3	3	50	50	100	1
	TOTAL	15	0	13	28	400	400	800	16

CIE: Continuous Internal Evaluation   SEE: Semester End Examination

L: Lecture,   T: Tutorial,   P: Practical

Bapatla Engineering College:: Bapatla
(Autonomous)

SCHEME OF INSTRUCTION & EXAMINATION (Semester System)
For
Computer Science and Engineering
Effective from the Academic Year 2018-2019 (R18 Regulations)
First Year B.Tech (SEMESTER – II)

Code No.	Subject	Scheme of Instruction (Periods per week)				Scheme of Examination (Maximum marks)			No. of Credits
		L	T	P	Total	CIE	SEE	Total Marks	
18MA002	Numerical methods and Advanced Calculus	4	0	0	4	50	50	100	3
18PH003	Semiconductor Physics	4	1	0	4	50	50	100	4
18CS203	Professional Ethics & Human Values	4	0	0	4	50	50	100	3
18CS204	Digital Logic Design	4	0	0	4	50	50	100	3
18EE001	Basic Electronics & Electrical Engineering	4	0	0	4	50	50	100	3
18CS001	Problem Solving using Programming	4	0	0	4	50	50	100	3
18PHL01	Semiconductor Physics Lab	0	0	3	3	50	50	100	1
18EEL01	Basic Electronics & Electrical Engineering Lab	0	0	3	3	50	50	100	1
18CSL01	Problem Solving using Programming Lab	0	0	3	3	50	50	100	1
	TOTAL	24	1	9	34	450	450	900	22

CIE: Continuous Internal Evaluation   SEE: Semester End Examination

L: Lecture,   T: Tutorial,   P: Practical

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SCHEME OF INSTRUCTION & EXAMINATION (Semester System)
For
Computer Science and Engineering
Effective from the Academic Year 2018-2019 (R18 Regulations)
Second Year B.Tech (SEMESTER – III)

Code No.	Subject	Scheme of Instruction (Periods per week)				Scheme of Examination (Maximum marks)			No. of Credits
		L	T	P	Total	CIE	SEE	Total Marks	
18MA003	Probability & Statistics	4	0	0	4	50	50	100	3
18CS302	Data Structures	4	0	0	4	50	50	100	3
18CS303	Discrete Mathematics	4	0	0	4	50	50	100	3
18CS304	Object Oriented Programming	4	0	0	4	50	50	100	3
18CS305	Operating Systems	4	0	0	4	50	50	100	3
18CS306	Microprocessor & Microcontrollers	4	0	2	6	50	50	100	4
18CSL31	Unix Programming Lab	2	0	3	5	50	50	100	3
18CSL32	Data Structures Lab	0	0	3	3	50	50	100	1
18CSL33	OOPs Lab	0	0	3	3	50	50	100	1
	TOTAL	26	0	11	37	450	450	900	24

CIE: Continuous Internal Evaluation   SEE: Semester End Examination

L: Lecture,   T: Tutorial,   P: Practical

Bapatla Engineering College:: Bapatla
(Autonomous)

SCHEME OF INSTRUCTION & EXAMINATION (Semester System)
For
Computer Science and Engineering
Effective from the Academic Year 2018-2019 (R18 Regulations)
Second Year B.Tech (SEMESTER – IV)

Code No.	Subject	Scheme of Instruction (Periods per week)				Scheme of Examination (Maximum marks)			No. of Credits
		L	T	P	Total	CIE	SEE	Total Marks	
18MA005	Optimization Techniques	4	0	0	4	50	50	100	3
18CS402	Web Technologies	4	0	0	4	50	50	100	3
18CS403	Database Management System	4	0	0	4	50	50	100	3
18CS404	Computer Organization	4	0	0	4	50	50	100	3
18EL002	Technical English	4	0	0	4	50	50	100	3
18CS406	Design and Analysis of Algorithms	4	0	0	4	50	50	100	3
18CSL41	Python Programming Lab	2	0	3	5	50	50	100	3
18CSL42	Web Technologies Lab	0	0	3	3	50	50	100	1
18CSL43	RDBMS Lab	0	0	3	3	50	50	100	1
	TOTAL	26	0	9	35	450	450	900	23

CIE: Continuous Internal Evaluation   SEE: Semester End Examination
L: Lecture,   T: Tutorial,   P: Practical

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SCHEME OF INSTRUCTION & EXAMINATION (Semester System)
For
Computer Science and Engineering
Effective from the Academic Year 2018-2019 (R18 Regulations)
Third Year B.Tech (SEMESTER – V)

Code No.	Subject	Scheme of Instruction (Periods per week)				Scheme of Examination (Maximum marks)			No. of Credits
		L	T	P	Total	CIE	SEE	Total Marks	
18CS501	Software Engineering	4	0	0	4	50	50	100	3
18CS502	Automata Theory & Formal Languages	4	0	0	4	50	50	100	3
18CS503	Enterprise Programming	4	0	0	4	50	50	100	3
18CS504	Computer Networks	4	0	0	4	50	50	100	3
18CS505	Indian Traditional Knowledge	3	0	0	3	50	50	100	0
18CSD1_	**Department Elective-I**	4	0	0	4	50	50	100	3
18CSL51	C# Programming	2	0	3	5	50	50	100	3
18CSL52	Enterprise Programming Lab	0	0	3	3	50	50	100	1
18ELL02	Soft Skills Lab	0	0	3	3	50	50	100	1
18CSMO1	MOOCs								2
	TOTAL	25	0	9	34	450	450	900	22

CIE: Continuous Internal Evaluation   SEE: Semester End Examination
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Department Elective-I	
18CSD11	Advanced Computer Architecture.
18CSD12	Data Warehousing
18CSD13	Artificial Intelligence

Bapatla Engineering College:: Bapatla
(Autonomous)

SCHEME OF INSTRUCTION & EXAMINATION (Semester System)
For
Computer Science and Engineering
Effective from the Academic Year 2018-2019 (R18 Regulations)
Third Year B.Tech (SEMESTER – VI)

Code No.	Subject	Scheme of Instruction (Periods per week)				Scheme of Examination (Maximum marks)			No. of Credits
		L	T	P	Total	CIE	SEE	Total Marks	
18CS601	Machine Learning	4	0	0	4	50	50	100	3
18CS602	Compiler Design	4	0	0	4	50	50	100	3
18CS603	Cryptograph & Network Security	4	0	0	4	50	50	100	3
18CS604	Middleware Technologies	4	0	0	4	50	50	100	3
18CSD2_	**Department Elective-II**	4	0	0	4	50	50	100	3
18CSD3_	**Department Elective-III**	4	0	0	4	50	50	100	3
18CSL61	Machine Learning Lab	0	0	3	3	50	50	100	1
18CSL62	Middleware Technologies Lab	0	0	3	3	50	50	100	1
18CSLD2_	**Dept. Elective-II Lab**	0	0	3	3	50	50	100	1
	TOTAL	24	0	9	33	450	450	900	21

CIE: Continuous Internal Evaluation   SEE: Semester End Examination
L: Lecture,   T: Tutorial,   P: Practical

Department Elective-II	
18CSD21	Mobile Application Development
18CSD22	Cloud Programming
18CSD23	Statistics with R

Dept. Elective-II Lab	
18CSLD21	Mobile Application Development Lab
18CSLD22	Cloud Programming Lab
18CSLD23	Statistics with R Lab

Department Elective-III	
18CSD31	Artificial Neural Networks and Deep Learning
18CSD32	Software Project Management
18CSD33	Digital Image Processing

Bapatla Engineering College:: Bapatla
(Autonomous)

SCHEME OF INSTRUCTION & EXAMINATION (Semester System)
For
Computer Science and Engineering
Effective from the Academic Year 2018-2019 (R18 Regulations)
Forth Year B.Tech (SEMESTER – VII)

Code No.	Subject	Scheme of Instruction (Periods per week)				Scheme of Examination (Maximum marks)			No. of Credits
		L	T	P	Total	CIE	SEE	Total Marks	
18CS701	Distributed System	4	0	0	4	50	50	100	3
18CS702	Wireless Networks	4	0	0	4	50	50	100	3
18CS703	Object Oriented Analysis and Design	4	0	0	4	50	50	100	3
18_ _I_ _	**Institutional Elective -I**	4	0	0	4	50	50	100	3
18CSD4_	**Department Elective-IV**	4	0	0	4	50	50	100	3
18CS706	Constitution of India	3	0	0	3	50	50	100	0
18CSP01	Project - I	0	0	4	4	50	50	100	2
18CSL72	Object Oriented Analysis and Design Lab	0	0	3	3	50	50	100	1
18CSLD4_	**Dept. Elective-IV Lab**	0	0	3	3	50	50	100	1
18CSII1	Internship					100	--	100	2
	TOTAL	23	0	10	33	550	450	1000	21

CIE: Continuous Internal Evaluation   SEE: Semester End Examination
L: Lecture,   T: Tutorial,   P: Practical

Department Elective-IV	
18CSD41	Cyber Security
18CSD42	Network Programming
18CSD43	Big Data Analytics

Dept. Elective-IV Lab	
18CSLD41	Cyber SecurityLab
18CSLD42	Network ProgrammingLab
18CSLD43	Big Data AnalyticsLab

Bapatla Engineering College:: Bapatla
(Autonomous)

SCHEME OF INSTRUCTION & EXAMINATION (Semester System)
For
Computer Science and Engineering
Effective from the Academic Year 2018-2019 (R18 Regulations)
Forth Year B.Tech (SEMESTER – VIII)

Code No.	Subject	Scheme of Instruction (Periods per week)				Scheme of Examination (Maximum marks)			No. of Credits
		L	T	P	Total	CIE	SEE	Total Marks	
18ME005	Industrial Management & Entrepreneurship Development	4	0	0	4	50	50	100	3
18_ _I_ _	**Institutional Elective -II**	4	0	0	4	50	50	100	3
18CSD5_	**Department Elective - V**	4	0	0	4	50	50	100	3
18CSP02	Project – II	0	0	10	10	75	75	150	10
	TOTAL	12	0	10	22	225	225	450	19

CIE: Continuous Internal Evaluation   SEE: Semester End Examination

L: Lecture,   T: Tutorial,   P: Practical

Department Elective – V	
18CSD51	Protocols for Secure Electronic Commerce
18CSD52	Blockchain Technologies
18CSD53	Object Oriented Software Engineering

Institutional Elective-I	
18CEI01	Air Pollution & Control
18CEI02	Sustainable Water and Sanitation
18ECI01	Consumer Electronics
18ECI02	Embedded Systems
18EEI01	Application of Wavelets to Engineering Problems
18EEI02	Industrial Electrical Systems
18EII01	Principles & Applications of MEMS
18EII02	Power System Instrumentation
18ITI01	Data Analytics
18ITI02	Cyber Security
18MEI01	Fluid Power and Control Systems
18MEI02	Project Management
18MAI01	Linear Algebra
18PHI01	Nano-Materials and Technology
18PHI02	Fiber Optic Communication
18HUI01	System Thinking

Institutional Elective-II	
18CEI03	Disaster Management
18CEI04	Remote sensing & GIS
18ECI03	Artificial Neural Network
18ECI04	Internet of Things
18EEI03	High Voltage Engineering
18EEI04	Energy Auditing and Conservation
18EII03	Robotics and Automation
18EII04	Advanced Computer Control Systems
18ITI03	Mobile Application Developments
18ITI04	Web Technology
18MEI03	Non-Conventional Energy Sources
18MEI04	Automobile Engineering
18MAI02	Graph Theory
18PHI03	Advanced Materials
18PHI04	Optical Electronics
18HUI02	Organizational Psychology
18HUI03	Telugu Modern Literature
18ELI03	English Through Media

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Linear Algebra and ODE
I B.Tech –I Semester (Code: 18MA001)

Lectures	4	Tutorial		0	Practical	0	Credits		3
Continuous Internal Assessment		:	50	Semester End Examination (3 Hours)			:	50

Prerequisites: None

Course Objectives:

CO1: To learn about solving a system of linear homogeneous and non-homogeneous equations, finding the inverse of a given square matrix and also its Eigen values and Eigen vectors.

CO2: Identify the type of a given differential equation and select and apply the appropriate Analytical technique for finding the solution of first order and higher order ordinary differential equations.

CO3: Create and analyze mathematical models using first and second order differential equations to solve application problems that arises in engineering.

CO4: To learn about solving linear Differential equations with constant coefficients with the given initial conditions using Laplace transform technique.

Course Outcomes: Students will be able to

CLO-1: Apply elementary row operations to find the rank of a matrix, to solve a system of linear equations and to find the inverse of a matrix.

CLO-2: Find the Eigen values and Eigen vectors of the given square matrix and also compute the higher powers of the given matrix.

CLO-3: Solve separable, linear, exact differential equations with and without initial conditions.

CLO-4: Distinguish between linear and non-linear differential equation.

CLO-5: Write the piecewise continuous functions in terms of unit step functions and hence find its Laplace transforms.

CLO-6: Solve linear differential equation with constant coefficients and unit step input functions using Laplace transforms technique.

SYLLABUS
UNIT - I

Linear Algebra: Rank of a Matrix; Elementary transformations of a matrix; Gauss-Jordan method of finding the inverse; Consistency of linear System of equations: Rouches theorem, System of linear Non-homogeneous equations, System of linear homogeneous equations; vectors; Eigen values; properties of Eigen values(without proofs); Cayley-Hamilton theorem (without proof).

[Sections: 2.7.1; 2.7.2; 2.7.6; 2.10.1; 2.10.2; 2.10.3; 2.12.1; 2.13.1; 2.14; 2.15.]

[12 Hours]

UNIT - II

Differential Equations of first order: Definitions; Formation of a Differential equation; Solution of a Differential equation; Equations of the first order and first degree; variables separable; Linear Equations; Bernoulli's equation; Exact Differential equations; Equations reducible to Exact equations: I.F found by inspection, I.F of a Homogeneous equation, In the equation M dx+ N dy=0.

Applications of a first order Differential equations: Newton's law of cooling; Rate of decay of Radio-active materials.

[Sections: 11.1; 11.3; 11.4; 11.5; 11.6; 11.9; 11.10; 11.11; 11.12.1; 11.12.2; 11.12.4; 12.6; 12.8]

[12 Hours]

UNIT – III

Linear Differential Equations: Definitions; Theorem; Operator D; Rules for finding the complementary function; Inverse operator; Rules for finding the Particular Integral; Working procedure to solve the equation; Method of Variation of Parameters; Applications of Linear Differential Equations: Oscillatory Electrical Circuits.

[Sections: 13.1; 13.2.1; 13.3; 13.4; 13.5; 13.6; 13.7;13.8.1;14.1;14.5]

[12 Hours]

UNIT – IV

Laplace Transforms: Definition; conditions for the existence; Transforms of elementary functions; properties of Laplace Transforms; Transforms of derivatives; Transforms of integrals; Multiplication by t^n; Division by t; Inverse transforms- Method of partial fractions; Other methods of finding inverse transforms; Convolution theorem(without proof); Application to differential equations: Solution of ODE with constant coefficients using Laplace transforms.

[Sections:21.2.1; 21.2.2; 21.3; 21.4; 21.7; 21.8; 21.9; 21.10; 21.12; 21.13; 21.14; 21.15.1]

[12 Hours]

TEXT BOOK:
B.S.Grewal, "Higher Engineering Mathematics", 44th edition, Khanna publishers, 2017.

REFERENCE BOOKS:
[1] ErwinKreyszig, "Advanced Engineering Mathematics", 9th edition, John Wiley & Sons.
[2] N.P.Bali and M.Goyal, "A Text book of Engineering Mathematics" Laxmi Publications, 2010.

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(Autonomous)

ENGINEERING CHEMISTRY-1
(Common to all branches)
I B.Tech – I/II Semester (Code: 18CY001)

Lectures	4	Tutorial	0	Practical	0	Credits	3
Continuous Internal Assessment	:	50	Semester End Examination (3 Hours)			:	50

PREREQUISITES:None

COURSE OBJECTIVES: The student should be conversant:

CO1: With the principles of water characterization and treatment of water for industrial purposes and methods of producing water for potable purposes.
CO2: To understand the thermodynamic concepts, energy changes, concept of corrosion & its control.
CO3: With the conventional energy sources, solid, liquid and gaseous Fuels & knowledge of knocking and anti-knocking characteristics.
CO4: With aim to gain good knowledge of organic reactions, plastics, conducting polymers & biodegradable polymers.

COURSE OUTCOME:

After studying this course, students will be able to:

CLO-1: Develop innovative methods to produce soft water for industrial use and potable water at cheaper cost.
CLO-2: Apply their knowledge in converting various energies of different systems and protection of different metals from corrosion.
CLO-3: Have the capacity of applying energy sources efficiently and economically for various needs.
CLO-4: Design economically and new methods of organic synthesis andsubstitute metals with conducting polymers and also produce cheaper biodegradable polymers to reduce environmental pollution.

UNIT I: Water Chemistry   15 hrs
Introduction: water quality parameters
Characteristics: Alkalinity, Hardness **-** Estimation & simple neumerical problems,
Boiler Troubles - Sludges, Scales, Caustic embrittlement, boiler corrosion, Priming and foaming;
Internal conditioning- phosphate, calgon and carbonate methods.
External conditioning - Ion exchange process & Zeolite proess
WHO Guidelines, Potable water, Sedimentation, Coagulation, Filtration. Disinfection methods: Chlorination, ozonization and UV treatment.
Salinity – Treatment of Brackish water by Reverse Osmosis and Electrodialysis.

UNIT II   15 hrs

Thermodynamic functions: energy, entropy and free energy. Estimations of entropy and free energies.Free energy and emf.Cell potentials, the Nernst equation and applications.

Corrosion: Types of corrosion - Chemical or dry corrosion, Electrochemical or wet corrosion; Galvanic, stress, pitting and differential aeration corrosion; Factors effecting corrosion, **Corrosion control** – Cathodic protection, and electro plating (Au)&electoless Ni plating.

UNIT III: Fuels   15 hrs

Classification of fuels; Calorific value of fuels (lower, higher)
Solid fuels: Determination of calorific value (Bomb Calorimeter) & related problems, Coal ranking,
Liquid Fuels: Petroleum refining and fractions, composition and uses. Knocking and anti-knocking Agents, Octane number and Cetane number; Bio fuels- Biodiesel, general methods of preparation and advantages
Gaseous fuels: CNG and LPG,
Flue gas analysis – Orsat apparatus.

UNIT IV   15 hrs

Organic reactions and synthesis of a drug molecule
Introduction to reactions involving substitution (SN^1, SN^2), addition (Markownikoff's and anti-Markwnikoff's rules) , elimination (E_1& E_2), Synthesis of a commonly used drug molecule.(Aspirin and Paracetamol)
Polymers: Conducting polymers: Classification, Intrinsic and Extrinsic conducting polymers and their applications**.** Plastics: Thermoplasts and thermosetting plastics, Bskelite and PVC.
Bio degradable polymers: types, examples-Polyhydroxybuterate (PHB), Polyhydroxybuterate-co-β-hydroxyvalerate (PHBV), applications.
TEXT BOOKS:

1. P.C. Jain and Monica Jain, "Engineering Chemistry" DhanpatRai Pub, Co., New Delhi 17th edition (2017).
2. SeshiChawla, "Engineering Chemistry"DhanpatRai Pub, Co LTD, New Delhi 13 th edition, 2013.

REFERENCES:

1 Essential Of Physical Chemistry by ArunBahl, B.S. Bahl, G.D.Tuli, by ArunBahl, B.S. Bahl, G.D.Tuli, Published by S Chand Publishers, 12th Edition, 2012.

2 Text Book of Engineering Chemistry by C.P. Murthy, C.V. Agarwal, A. Naidu B.S. Publications, Hyderabad (2006).

3 Engineering Chemistry by K. Maheswaramma, Pearson publishers 2015.

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Environmental Studies
I B.Tech – I/II Semester (Code: 14CE001)

Lectures	4	Tutorial	0	Practical	0	Credits	2
Continuous Internal Assessment	:	50	Semester End Examination (3 Hours)			:	50

Prerequisites: None
Course Objectives: To learn
CO1: To develop an awareness,knowledge, and appreciation for the naturalenvironment.
CO2: To understand different types of ecosystems exist in nature.
CO3: To know our biodiversity.
CO4: To understand different types of pollutants present in Environment.
CO5: To know the global environmental problems.

Course Outcomes: Students will be able to
CLO 1: Develop an appreciation for the local and natural history of the area.
CLO 2: Hope for the better future of environment in India which is based on many positive factors like Biodiversity, successive use of renewable energy resources and other resources, increasing number of people's movements focusing on environment.
CLO 3: Know how to manage the harmful pollutants.
CLO 4: Gain the knowledge of Environment.
CLO 5: Create awareness among the youth on environmental concerns important in the long-term interest of the society

UNIT – I
Introduction: Definition, Scope and Importance, Need for public awareness. Ecosystems: Definition, Structure and Functions of Ecosystems, types - Forest, Grassland, Desert, Aquatic (Marine, pond and estuaries). *6 periods*

Biodiversity: Definition and levels of Biodiversity; Values of Biodiversity - Consumptive, Productive, Social, Aesthetic, Ethical and Optional; Threats and Conservation of Biodiversity; Hot Spots of Biodiversity, Bio-geographical Classification of India, India as a mega diversity nation. *Chipko movement case study* *6 periods*

UNIT – II
Natural resources: Land: Land as a resource, Causes and effects of land degradation - Soil erosion, Desertification. **Forest**: Use of forests, Causes and effects of deforestation, Afforestation, Mining - benefits and problems. **Water**: Uses, floods and drought, Dams - benefits and problems.

Energy: Importance of energy, Environmental Impacts of Renewable and Non-renewable energy resources. *Silent Valley Project and Narmada BachaoAndolan case studies8 periods*

Sustainability: Definition, Concept and Equitable use of resources for sustainable development; Rain water harvesting and Watershed management. Fieldwork on Rain water harvesting and Watershed management. *6 periods + 6 hours field work/Demonstration*

UNIT – III

Pollution: Definition; Causes, effects and control of air, water and nuclear pollution; *Chernobyl Nuclear Disaster* case study; Solid Waste: urban, Industrial and hazardous wastes; Integrated waste management - 3R approach, composting and vermicomposting.   *12 periods*

Environmental acts: Water and air (Prevention and Control of pollution) acts, Environmental protection act, Forest Conservation act.   *6 periods*

UNIT – IV

Environmental issues: Green house effect & Global warming, Ozone layer depletion, Acid rains, Green Revolution, Population Growth and environmental quality, Environmental Impact Assessment.Environmental Standards (ISO 14000, etc.)   *12 periods*
Case Studies: Bhopal Tragedy, Mathura Refinery and TajMahal, and Ralegan Siddhi (Anna Hazare).   *6 periods*

Field work: Visit to a local area to document environmental assets – Pond/Forest/Grassland. Visit to a local polluted site- Urban and industry/ Rural and Agriculture.   *6 hrs.*

TEXT BOOKS:
1. "Environmental Studies" by Benny Joseph, Tata McGraw-Hill Publishing Company Limited, New Delhi.
2. "Comprehensive environmental studies"- JP Sharma, Laxmi Publications.
3. Text Book of environmental Studies – ErachBharucha

REFERENCE BOOKS:
1. "Environmental studies", R.Rajagopalan, Oxford University Press.
2. "Introduction to Environmental Science", Anjaneyulu Y, B S Publications
3. "Environmental Science", 11th Edition – Thomson Series – By Jr. G. Tyler Miller.

Bapatla Engineering College:: Bapatla
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Communicative English
18EL001

Lectures:3 Periods/Week Continuous Assessment: 50M
Sem End Exam Duration: 3 hours Sem End Exam : 50M

Credits: 2

UNIT-I

 1.1 **Vocabulary Development**: Word formation-Formation of Nouns, Verbs & Adjectives from Root words-Suffixes and Prefixes
 1.2 **Essential Grammar:** Prepositions, Conjunctions, Articles
 1.3 **Basic Writing Skills**: Punctuation in writing
 1.4 **Writing Practices**: Mind Mapping, Paragraph writing (structure-Descriptive, Narrative, Expository & Persuasive)

UNIT-II

 2.1 **Vocabulary Development**: Synonyms and Antonyms
 2.2 **Essential Grammar**: Concord, Modal Verbs, Common Errors
 2.3 **Basic Writing Skills**: Using Phrases and clauses
 2.4 **Writing Practices**: Hint Development, Essay Writing

Unit III

 3.1 **Vocabulary Development**: One word Substitutes
 3.2 **Essential Grammar**: Tenses, Voices
 3.3 **Basic Writing Skills**: Sentence structures (Simple, Complex, Compound)
 3.4 **Writing Practices**: Note Making

Unit IV

 4.1 **Vocabulary Development**: Words often confused
 4.2 **Essential Grammar**: Reported speech, Common Errors
 4.3 **Basic Writing Skills**: Coherence in Writing: Jumbled Sentences
 4.4 **Writing Practices**: Paraphrasing &Summarising

Reference Books
 ❖ Communication Skills, Sanjay Kumar &PushpaLatha. Oxford University Press:2011.
 ❖ Practical English Usage, Michael Swan. Oxford University Press:1995.
 ❖ Remedial English Grammar, F.T.Wood. Macmillan:2007.
 ❖ Study Writing, Liz Hamplyons& Ben Heasley. Cambridge University Press:2006

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Engineering Graphics
I B.Tech – I Semester (Code: 18MEL01)

Lectures	1	Tutorial	0	Practical	4	Credits	3
Continuous Internal Assessment	:	50	Semester End Examination (3 Hours)		:		50

Prerequisites: None

Course Objectives: To learn

CO1: clear picture about the importance of engineering graphics in the field of engineering
CO2: the drawing skills and impart students to follow Bureau of Indian Standards
CO3: To give an idea about Geometric constructions, Engineering curves, orthographic projections and pictorial projections
CO4: imagination skills about orientation of points, lines, surfaces and solids
CO5: basic drafting skills of AutoCAD

Course Outcomes: Students will be able to

CLO-1: draw projections of points and projections of lines using Auto CAD
CLO-2: plot projections of surfaces like circle, square and rhombus
CLO-3: plot the Projections of solids like Prisms and pyramids
CLO-4: convert the of Orthographic views into isometric views of simple objects
CLO-5: generate the of pictorial views into orthographic views of simple castings

UNIT – I
INTRODUCTION: Introduction to Drawing instruments and their uses, geometrical construction procedures
INTRODUCTION TO AUTOCAD:
 Basics of sheet selection, Draw tools, Modify tools, dimensioning
METHOD OF PROJECTIONS: Principles of projection - First angle and third angle projection of points. Projection of straight lines. Traces of lines.

UNIT II
PROJECTIONS OF PLANES: Projections of plane figures: circle, square, rhombus, rectangle, triangle, pentagon and hexagon.

UNIT – III
PROJECTIONS OF SOLIDS: Projections of Cubes, Prisms, Pyramids, Cylinders and Cones Inclined to one plane.   .

UNIT –IV
ISOMETRIC PROJECTIONS: Isometric Projection and conversion of Orthographic views into isometric views. (Treatment is limited to simple objects only).

UNIT –V
ORTHOGRAPHIC PROJECTIONS: Conversion of pictorial views into Orthographic views. (Treatment is limited to simple castings).

TEXT BOOK:
1. Engineering Drawing with AutoCAD by Dhananjay M. Kulkarni (PHI publication)
2. Engineering Drawing by N.D. Bhatt & V.M. Panchal. (Charotar Publishing House, Anand). (First angle projection)

REFERENCE BOOKS:
1. Engineering Drawing by Dhananjay A Jolhe, Tata McGraw hill publishers
2. Engineering Drawing by Prof.K.L.Narayana& Prof. R.K.Kannaiah.

ENGINEERINGCHEMISTRY LABORATORY

(Common to all branches)

I B.Tech – I/II Semester (Code: 18CYL01)

Lectures	0	Tutorial	0	Practical	3	Credits		1
Continuous Internal Assessment	:	50	Semester End Examination (3 Hours)				:	50

LIST OF EXPERIMENTS

1. **Introduction to Chemistry Lab** (the teachers are expected to teach fundamentals likeCalibration of Volumetric Apparatus, Primary, Secondary Solutions, Normality, Molarity, Molality etc. and error, accuracy, precision, theory of indicators, use of volumetric titrations).

2. **Volumetric Analysis:**
   a. Estimation of Washing Soda.
   b. Estimation of Active Chlorine Content in Bleaching Powder
   c. Estimation of Mohr's salt by permanganometry.
   d. Estimation of given salt by using Ion-exchange resin using Dowex-50.

3. **Analysis of Water:**
   a. Determination of Alkalinity of Tap water.
   b. Determination of Total Hardness of ground water sample by EDTA method
   c. Determination of Salinity of water sample

4. **Estimation of properties of oil**:
   a. Estimation of Acid Value
   b. Estimation of Saponification value

5. **Preparations:**
   a. Preparation of Soap
   b. Preparation of Urea-formaldehyde resin
   c. Preparation of Phenyl benzoate

6. **Demonstration Experiments (Any two of the following):**
   a. Determination of p^H of given sample.
   b. Determination of conductivity of given sample by conductometer.
   c. Potentiometric Determination of Iron.

TEXT BOOKS (for Chemistry 1 and 2):

1. Practical Engineering Chemistry by K.Mukkanti, Etal, B.S. Publicaitons, Hyderabad, 2009.
2. Inorganic quantitative analysis, Vogel, 5th edition, Longman group Ltd. London, 1979.

REFERENCE BOOKS:

1. Text Book of engineering chemistry by R.n. Goyal and HarrmendraGoel.
2. A text book on experiments and calculations- Engineering Chemistry. S.S. Dara.
3. Instrumental methods of chemical analysis, Chatwal, Anand, Himalaya Publications.

Workshop Practice

I B.Tech – I & II Semester (Code: 18MEL02)

Lectures	0	Tutorial	0	Practical	3	Credits	1
Continuous Internal Assessment	:	50	Semester End Examination (3 Hours)			:	50

Prerequisites: None

Course Objectives:
1. To impart student knowledge on various hand tools for usage in engineering applications.
2. Be able to use analytical skills for the production of components.
3. Design and model different prototypes using carpentry, sheet metal and welding.
4. Make electrical connections for daily applications.
5. To make student aware of safety rules in working environments.

Course Outcomes: After completion of this course student should be able to:
1. Make half lap joint, Dovetail joint and Mortise &Tenon joint
2. Produce Lap joint, Tee joint and Butt joint using Gas welding
3. Prepare trapezoidal tray, Funnel and T-joint using sheet metal tools
4. Make connections for controlling one lamp by a single switch, controlling two lamps by a single switch and stair case wiring.

Syllabus:
1. Carpentry
   a. Half Lap joint
   b. Dovetail joint
   c. Mortise &Tenon joint
2. Welding using electric arc welding process/gas welding
   a. Lap joint
   b. Tee joint
   c. Butt joint
3. Sheet metal operations with hand tools
   a. Trapezoidal tray
   b. Funnel
   c. T-joint
4. House wiring
   a. To control one lamp by a single switch
   b. To control two lamps by a single switch
   c. Stair-case wiring

TEXT BOOKS:
1. P.Kannaiah and K.L.Narayana, Workshop Manual, SciTech Publishers, 2009.
K. Venkata Reddy, Workshop Practice Manual, BS Publications, 2008

English Communication Skills Laboratory
18ELL01

Lectures:3 Periods/Week   Continuous Assessment: 50M
Sem End Exam Duration: 3 hours   Sem End Exam   : 50M
Credits: 1

UNIT-I

1.1 Listening Skills; Importance – Purpose- Process- Types
1.2 Barriers to Listening
1.3 Strategies for Effective Listening

UNIT-II

2.1 Phonetics; Introduction to Consonant, Vowel and Diphthong sounds
2.2 Stress
2.3 Rhythm
2.4 Intonation

UNIT-III

3.1 Formal and Informal Situations
3.2 Expressions used in different situations
3.3 Introducing Yourself & Others-Greeting & Parting-Congratulating-Giving Suggestions
& Advices-Expressing Opinions-Inviting People-Requesting-Seeking Permission-Giving
    Information- Giving Directions- Sympathizing- Convincing People- Complaining &
    Apologizing-Thanking Others- Shopping- Travelling- Conversational Gambits

UNIT-IV

4.1 JAM Session
4.2 Debates
4.3 Extempore

Reference Books:
   ❖ Communication Skills, Sanjay Kumar and PushpaLata. Oxford University Press. 2011
   ❖ Better English Pronunciation, J.D. O' Connor. Cambridge University Press:1984
   ❖ New Interchange (4rth Edition), Jack C Richards. Cambridge University Press:2015
   ❖ English Conversation Practice, Grant Taylor. McGraw Hill:2001

Software:
   ❖ Buzzers for conversations, New Interchange series
   ❖ English in Mind series, Telephoning in English
   ❖ Speech Solutions, A Course in Listening and Speaking

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Numerical Methods and Advanced Calculus
I B.Tech –II Semester (Code: 18MA002)

Lectures	4	Tutorial	0	Practical	0	Credits	3
Continuous Internal Assessment		:	50	Semester End Examination (3 Hours)		:	50

Prerequisites: None

Course Objectives:
CO1: To learn about some advanced numerical techniques e.g. solving a nonlinear equation, linear system of equations, Interpolation and Approximation techniques.
CO2: To learn about evaluation of double and triple integrals and their applications.
CO3: To learn some basic properties of scalar and vector point functions and their applications to line,surface and volume integrals.

Course Outcomes: Students will be able to
CLO-1: Solve non-linear equations in one variable and system of linear equations using iteration methods.
CLO-2: Choose appropriate interpolation formulae based on the given data.
CLO-3: Compute the value of a definite integral using numerical integration techniques.
CLO-4: Predict the numerical solution of the derivative at a point from the given initial value problem using appropriate numerical method.
CLO-4 :Evaluate the double and triple integrals using change of variables.
CLO-5: Transformline integrals to surface and surface to volume integrals and evaluate them.

SYLLABUS

UNIT - I

Numerical Solution of Equations: Introduction; Solution of algebraic and transcendental equations: Bisection method, Method of false position, Newton-Raphson method; Useful deductions from the Newton-Raphson formula; Solution of linear simultaneous equations; Direct methods of solution: Gauss elimination method, Gauss-Jordan method, Factorization method; Iterative methods of solution: Jacobi's iterative method, Gauss-Seidel iterative method.

[Sections: 28.1; 28.2; 28.3; 28.5; 28.6; 28.7.1;28.7.2].   [12 Hours]

UNIT - II

Finite differences and Interpolation: Finite differences: Forward differences, Backward differences; Newton's interpolation formulae: Newton's forward interpolation formula, Newton's backward interpolation formula; Interpolation with unequal intervals; Lagrange's interpolation formula; Divided differences; Newton's divided difference formula; Numerical integration; Trapezoidal rule; Simpson's one-third rule; Simpson's three-eighth rule; Numerical solution of ODE's: Introduction; Picard's method; Euler's method; Runge-Kutta method.

[Sections:29.1; 29.1-1; 29.1.2; 29.6; 29.9; 29.10; 29.11; 29.12; 30.4; 30.6; 30.7; 30.8; 32.1; 32.2; 32.4; 32.7].   [12 Hours]

UNIT – III

Multiple Integrals: Double integrals; Change of order of integration; Double integrals in polar coordinates; Area enclosed by plane curves; Triple integrals; Volumes of solids: Volume as Triple integrals, Change of variables.

[Sections: 7.1; 7.2; 7.3; 7.4; 7.5; 7.6.2; 7.7.2]. [12 Hours]

UNIT – IV

Vector calculus and its Applications: Scalar and vector point functions; Del applied to scalar point functions-Gradient: Definition, Directional derivative; Del applied to vector point functions: Divergence, Curl; Line integral; Surfaces: Surface integral, Flux across a surface; Green's theorem in the plane (without proof); Stokes theorem (without proof); Gauss divergence theorem(without proof).

[Sections: 8.4; 8.5.1; 8.5.3; 8.6; 8.11; 8.12; 8.13; 8.14; 8.16]   [12 Hours]

TEXT BOOK:
B.S.Grewal, "Higher Engineering Mathematics", 44thedition, Khanna publishers, 2017.

REFERENCE BOOKS:
[1] ErwinKreyszig, "Advanced Engineering Mathematics", 9th edition, John Wiley & Sons.
[2] N.P.Bali and M.Goyal, "A Text book of Engineering Mathematics" Laxmi Publications, 2010.

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SEMICONDUCTOR PHYSICS AND NANO MATERIALS
¼ B.Tech II-semester: CODE:18PH003
(Common for CSE,IT,EEE,&EIE)

Lectures	3	Tutorials	0	Practical	0	Credits	3
Continuous Internal Assessment			50	Semester End Examination			50

Course Objectives:

CO1: This unit aim to build the foundation and inspires interest of freshmen into electrical and electronics and to focus on fundamental concepts and basic principles regarding electrical conduction.

CO2: This unit provides various properties of semiconductor materials and their importance in various device fabrications.

CO3: This unit aim to educate the student on various opto-electronic devices and their applications.

CO4: This unit provide information about the principles of processing, manufacturing and characterization of nanomaterials, nanostructures and their applications.

COURSE OUTCOMES:

The students were able to

CLO1: understand concepts of band structure of solids, concept of hole and effective mass of electron in semiconductors.

CLO2: know the concept of Fermi level and various semiconductor junctions.

CLO3: familiar with working principles of various opto-electronic devices and their applications.

CLO4: understand importance of nano-materials and their characteristic properties.

UNIT -I
ELECTRONIC MATERILAS:
        Sommerfeld free electron theory, Fermi level and energy, density of states, Failure of free electron theory (Qualitative), Energy bands in solids, E-K diagrams, Direct and Indirect band gaps. Types of Electronic materials: Metals, Semi conductors and Insulators, Occupation Probability, effective mass, Concept of hole.

UNIT – II
SEMICONDUCTORS:
        Introduction to semiconductors, intrinsic and extrinsic semiconductors, carrier concentrations, Fermi level and temperature dependence, Continuity equation, Diffusion and drift, P-N junction (V-I characteristics), Metal – Semiconductor junction (Ohmic and Schottky), Semiconductor materials of interest for opto- electronic devices.

UNIT-III
OPTO-ELECTRONIC DEVICES AND DISPLAY DEVICES:
Photo voltaic effect, principle and working of LED, Applications of Photo diode, Solar cell, PIN & APD Diode, Liquid crystal display, Opto electric effect: Faraday Effect and Kerr effect.

UNIT-IV
NANO-MATERIALS:
Introduction to nano technology, quantum confinement, surface to volume ratio, properties of nano materials, synthesis of nano-materials: CVD, sol-gel methods, laser ablation. Carbon nano tubes: types, properties, applications. Characterization of nano materials: XRD, SEM, applications of nano materials.

TEXT BOOKS:
1. A text book of engineering physics by Avadhanulu and KshirsagarS.Chand& Co. (2013)
2. Applied physics by Dr.*P.SrinivasaRao*. Dr.K.*Muralidhar*
3. Introduction to solid state state physics, Charles Kittel, 8th edition
4. Solid state physics, S.O. Pillai

REFERENCE BOOKS:
1. Text book on Nanoscience and Nanotechnology (2013): B.S. Murty, P. Shankar, Baldev Raj, B.B. Rath and J. Murday, Springer Science & Business Media.
2. Basic Engineering Physics ,Dr.*P.SrinivasaRao*. Dr.K.*Muralidhar.* Himalaya Publications, 2016

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PROFESSIONAL ETHICS & HUMAN VALUES
(Common for all branches)

I B.Tech – II Semester (Code:18CS203)

Lectures	4	Tutorial	0	Practical	0	Credits	3
Continuous Internal Assessment	:	50	Semester End Examination (3 Hours)			:	50

Prerequisites: None

Course Objectives: Student will be able to

1. Comprehend a specific set of behaviour and values any professional must know and must abide by, including confidentiality, honesty and integrity. Understand engineering as social experimentation.
2. Know, what are safety and Risk and understand the responsibilities and rights of an engineer such as collegiality, loyalty, bribes/gifts.
3. Recognize global issues visualizing globalization, cross-cultural issues, computer ethics and also know about ethical audit
4. Discuss case studies on Bhopal gas tragedy, Chernobyl and about codes of Institute of Engineers, ACM

Course Outcomes: Student will be able to:

1.1 Know, about human values and virtues such as integrity, civic virtue, respecting others

1.2 Learn the importance of living peacefully, caring and sharing, empathy.

1.3 Understand the basics of Engineering Ethics such as Consensus and Controversy, Profession and Professionalism, Professional Roles of Engineers.

1.4 Debate on Ethical Theories like Kohlberg's Theory, Gilligan's Argument.

1.5 Learn Engineering as Social Experimentation, Comparison with Standard Experiments, Knowledge Gained, Conscientiousness, Relevant Information, Learning from the Past.

1.6 Propose Engineers as Managers, Consultants, and Leaders, understand Roles of Codes.

2.1 Determine what is safety and risk, types of risks, analyse risk-benefit

2.2 Discuss responsibilities and rights of engineers, Collegiality, Two Senses of Loyalty, Obligations of Loyalty, Misguided Loyalty, Professionalism and Loyalty,

2.3 Debate on Professional Rights, Professional Responsibilities, Conflict of Interest, Self-interest, Customs and Religion, Collective Bargaining,

2.4 Explain Confidentiality, Acceptance of Bribes/Gifts, Occupational Crimes, Whistle Blowing.

3.1 Visualise Globalization, Cross-cultural Issues, Environmental Ethics, Computer Ethics, Weapons Development.

3.2 Discuss Ethical Problems in Research, Intellectual Property Rights (IPRs).

3.3 Know the importance of Ethical Audit, Aspects of Project Realization, Ethical Audit Procedure, The Decision Makers,

3.4 Understand Variety of Interests, Formulation of the Brief, The Audit Statement, The Audit Reviews.

4.1 Discuss Case Studies: Bhopal Gas Tragedy, The Chernobyl Disaster

4.2 Know about Institution of Engineers (India): Sample Codes of Ethics.

4.3 Comprehend ACM Code of Ethics and Professional Conduct.

UNIT – I

Human Values: Morals, Values and Ethics, Integrity, Work Ethics, Service and Learning, Civic Virtue, Respect for Others, Living Peacefully, Caring and Sharing, Honesty, Courage, Value Time, Cooperation, Commitment and Empathy, Spirituality, Character.

Engineering Ethics: History of Ethics, Engineering Ethics, Consensus and Controversy, Profession and Professionalism, Professional Roles of Engineers, Self Interest, Customs and Religion, Uses of Ethical Theories, Professional Ethics, Types of Inquiry, Kohlberg's Theory, Gilligan's Argument, Heinz's Dilemma.

Engineering as Social Experimentation: Comparison with Standard Experiments, Knowledge Gained, Conscientiousness, Relevant Information, Learning from the Past, Engineers as Managers, Consultants, and Leaders, Accountability, Roles of Codes, Codes and Experimental Nature of Engineering.

UNIT II

Engineers' Responsibility for Safety and Risk: Safety and Risk, Types of Risks, Safety and the Engineer, Designing for Safety, Risk-Benefit Analysis, Accidents.

Responsibilities and Rights: Collegiality, Two Senses of Loyalty, Obligations of Loyalty, Misguided Loyalty, Professionalism and Loyalty, Professional Rights, Professional Responsibilities, Conflict of Interest, Self-interest, Customs and Religion, Collective Bargaining, Confidentiality, Acceptance of Bribes/Gifts, Occupational Crimes, Whistle Blowing.

UNIT III

Global Issues: Globalization, Cross-cultural Issues, Environmental Ethics, Computer Ethics, Weapons Development, Ethics and Research, Analyzing Ethical Problems in Research, Intellectual Property Rights (IPRs).

Ethical Audit: Aspects of Project Realization, Ethical Audit Procedure, The Decision Makers, Variety of Interests, Formulation of the Brief, The Audit Statement, The Audit Reviews.

UNIT IV

Case Studies: Bhopal Gas Tragedy, The Chernobyl Disaster.

Appendix 1: Institution of Engineers (India): Sample Codes of Ethics.

Appendix 2: ACM Code of Ethics and Professional Conduct.

TEXT BOOK:
1. "Professional Ethics & Human Values", M.GovindaRajan, S.Natarajan, V.S.SenthilKumar, PHI Publications 2013.

REFERENCE BOOKS:
1. "Ethics in Engineering", Mike W Martin, Ronald Schinzinger, TMH Publications.

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DIGITAL LOGIC DESIGN

I B.Tech – II Semester(Code: 18CS204)

Lectures	4	Tutorial		0	Practical		0	Credits		3
Continuous Internal Assessment			:	50	Semester End Examination (3 Hours)				:	50

Prerequisites: Basic Computer Knowledge.

Course Objectives: Students will be able to:
1. Understand of the fundamental concepts and techniques used in digital electronics, and Number conversions.
2. Understand basic arithmetic operations in different number systems and simplification of Boolean functions using Boolean algebra and K-Maps.
3. Simplify the Boolean functions using Tabulation method, Concepts of combinational logic circuits.
4. Understand the concepts of Flip-Flops, Analysis of sequential circuits.
5. Understand the concepts of Registers, Counters and classification of Memory units.

Course Outcomes: Students will be able:
1. To perform all the basic arithmetic operations in various number systems.
2. To perform subtraction operation using various complements.
3. To learn various Boolean algebraic rules and laws.
4. To simplify Boolean function using Boolean algebraic rules and laws.
5. To learn various Logic gates.
6. To simplify Boolean functions using K-Map method.
7. To simplify Boolean functions using Tabulation method.
8. To Analyze and design of various Combinational logic circuits.
9. To learn various functionalities of Flip-Flops.
10. To Analyze and design of various Sequential logic circuits.
11. To Analyze and design of Registers, Counters & Types of memories.

UNIT – I

DIGITAL SYSTEMS AND BINARY NUMBERS: Digital System, Binary Numbers, Number base Conversions, Octal and Hexadecimal Numbers, Complements of Numbers, Signed Binary Numbers, Binary Codes, Binary Storage and Registers, Binary Logic, Error Detection and Correction: 7 bit Hamming Code.

BOOLEAN ALGEBRA & LOGIC GATES: Introduction, Basic definitions, Axiomatic definition of Boolean algebra, Basic theorems and properties of Boolean algebra, Boolean functions, Canonical and Standard Forms, Other Logic Operations, Digital logic gates.

GATE –LEVEL MINIMIZATION: Introduction, The map method, Four-variable K-Map, Product-of-Sums Simplification, Don't –Care Conditions, NAND and NOR implementation, Other Two level Implementations.

UNIT II

MINIMIZATION: The Tabulation method, Determination of prime implicants, Selection of prime-implicants.

COMBINATIONAL LOGIC: Introduction, Combinational Circuits, Analysis Procedure, Design Procedure, Binary Adders - Subtractor, Decimal Adder, Magnitude Comparator, Decoders, Encoders, Multiplexers.

UNIT III

SYNCHRONOUS SEQUENTIAL LOGIC: Introduction, Sequential Circuits, Storage Elements - Latches, Storage Elements -Flip Flops, Analysis of Clocked Sequential Circuits: State Equations, State Table, State Diagram, Flip Flop Input Equations, Analysis with D, JK and T Flip Flops; State reduction and Assignment, Design Procedure.

UNIT IV

REGISTERS and COUNTERS: Registers, Shift registers, Ripple Counters, Synchronous Counters.

MEMORY and PROGRAMMABLE LOGIC: Introduction, Random Access Memory: Read and Write Operations, Types of Memories; Read Only Memory, Programmable Logic Devices: PROM, PLA, PAL.

TEXT BOOK:
1. M. Morris Mano, Michael D. Ciletti, "Digital Design", 5th Edition,Prentice Hall, 2013.
2. A.Anand Kumar, "fundamentals of digital circuits", 4th Edition, PHI.

REFERENCE BOOKS:
1. John F. Wakerly, "Digital Design: Principles and Practices", 4th Edition, Pearson, 2006.
2. Brian Holdsworth , Clive Woods, "Digital Logic Design", 4th Edition, Elsevier Publisher, 2002.
3. Donald E Givone, "digital principles and design", TMT.

Bapatla Engineering College:: Bapatla
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Basic Electrical and Electronics Engineering
(Common for CSE,IT,ME branches)
I B.Tech – I Semester (Code: 18EE001)

Lectures	4	Tutorial		1	Practical		0	Credits		4	
Continuous Internal Assessment		:	50	Semester End Examination (3 Hours)				:		50	

Prerequisites: Mathematics, Physics

Course Objectives:

CO1: To understand basic Laws in circuits, analysis of simple DC circuits, Theorems and its applications, fundamentals of AC circuits & its analysis and concepts of three phase balanced circuits.

CO2: To learn basic properties of magnetic materials and its applications..

CO3: To understand working principle, construction, applications and performance of DC machines, AC machines.

CO4: To learn basic concepts, working principal, characteristics and applications of semiconductor diode and transistor family.

CO5: To gain knowledge about the static converters and regulators.

CO6: To learn basic concepts of power transistors and operational amplifiers closer to practical applications.

Course Outcomes: Students will be able to

CO1: Solve problems involving with DC and AC excitation sources in electrical circuits.

CO2: Compare properties of magnetic materials and its applications.

CO3: Analyze construction, principle of operation, application and performance of DC machines and AC machines.

CO4: Explore characteristics and applications of semiconductor diode and transistor family.

CO5: Make the static converters and regulators.

CO6: Analyze concepts of power transistors and operational amplifiers closer to practical applications.

UNIT – I

Electrical Circuits

Electrical circuit elements (R, L and C), voltage and current sources, Kirchhoff current and voltage laws, analysis of simple circuits with dc excitation. Superposition, Thevenin and Norton Theorems. Representation of sinusoidal waveforms, peak and rms values, phasor representation, real power, reactive power, apparent power, power factor. Analysis of single-phase AC circuits consisting of R, L, C, RL, RC, RLC combinations (series and parallel), resonance. Three-phase balanced circuits, voltage and current relations in star and delta connections.

UNIT –II

Electrical Machines (18 hours)

Magnetic materials, BH characteristics, Construction, working of DC machines, ideal and practical transformer, equivalent circuit, losses in transformers, regulation and efficiency.

Auto-transformer and three-phase transformer connections. Generation of rotating magnetic fields, Construction and working of a three-phase induction motor, Significance of torque-slip characteristic. Loss components and efficiency, starting and speed control of induction motor. Single-phase induction motor. Construction and working of synchronous generators.

UNIT-III

Semiconductor Diodes and applications

Semiconductor materials, semiconductor diode, Resistance levels, Diode equivalent circuits, Zener diode, Light emitting diode, Load line analysis, half wave rectification, Full wave rectification, Bridge rectifier, Use of capacitor filter in rectifier, Zener diode voltage regulator, Clippers, Clampers

Bipolar Junction Transistors

Transistor construction and operation, Common base configuration, Transistor amplifying action, Common emitter configuration, Common collector configuration, Limits of operation. DC load line and bias point, Voltage divider bias of transistor.

UNIT-IV

Field Effect Transistors

Construction and characteristics of JFET and MOSFET

Operational Amplifiers

Introduction, Differential and common mode operation, OP-AMP Basics, Practical OP-AMP circuits: Inverting amplifier, Non inverting amplifier, Unity follower, summing amplifier, Integrator and differentiator.

TEXT BOOK:
1. S.K. Bhattacharya, "Basic Electrical and Electronics Engineering", Pearson Publications
2. Robert L. Boylestad & Louis Nashelsky, ' Electronic Devices and circuit theory', PHI Pvt.Limited, 11th edition
3. "Basics of Electrical and Electronics Engineering", Nagsarkar T K and Sukhija M S, Oxford press University Press.

Reference Books:

1. David A. Bell, 'Electronic Devices and Circuits', oxford publisher,5th edition
2. "Basic Electrical, Electronics and Computer Engineering", Muthusubramanian R, Salivahanan S and Muraleedharan K A, Tata McGraw Hill, Second Edition, (2006).

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PROBLEM SOLVING USING PROGRAMMING
(Common for all branches except Civil Engineering)

I B.Tech – II Semester (Code:18CS001)

Lectures	4	Tutorial	0	Practical	0	Credits	3
Continuous Internal Assessment	:	50	Semester End Examination (3 Hours)		:	50	

Prerequisites: BASIC MATHEMATICS

Course Objectives: Students will be able to
1. Understand basic concepts of C Programming such as: C-tokens, Operators, Input/output, and Arithmetic rules.
2. Develop problem-solving skills to translate 'English' described problems into programs written using C language.
3. Use Conditional Branching, Looping, and Functions.
4. Apply pointers for parameter passing, referencing and differencing and linking data structures.
5. Manipulate variables and types to change the problem state, including numeric, character, array and pointer types, as well as the use of structures and unions, File.

Course Outcomes:
After the course the students are expected to be able to

1. Choose the right data representation formats based on the requirements of the problem.

2. Analyse a given problem and develop an algorithm to solve the problem.

3. Use the comparisons and limitations of the various programming constructs and choose the right one for the task in hand.

4. Write the program on a computer, edit, compile, debug, correct, recompile and run it.

5. Identify tasks in which the numerical techniques learned are applicable and apply them to write programs, and hence use computers effectively to solve the task.

UNIT I **(17 Periods)**

Overview of C, Constants, Variables and Data Types, Operators and Expressions, Managing I/O Operations. Decision Making and Branching.
Programming Exercises for Unit I: C-expressions for algebraic expressions, evaluation of arithmetic and Boolean expressions. Syntactic and logical errors in a given program, output of a given program, values of variables at the end of execution of a program fragment, Programs using Scientific and Engineering formulae. Finding the largest of the three given numbers. Computation of discount amount on different types of products with different discount percentages. Finding the class of an input character, finding the type of triangle formed with the given sides, computation of income-tax, finding given year is leap year or not, and conversion of lower case character to its upper case.

UNIT II   (17 Periods)

Decision Making and Looping, Arrays, Character Arrays and Strings.

Programming Exercises for Unit II: To print the sum of the digits of a given number and to display the image of a given number. To find whether a given number is prime, printing Fibonacci sequence and to find prime factors of a given number. To print graphic patterns of symbols and numbers. To find the length of a string, compare strings, reverse a string, copy a string and to find whether the given string is palindrome or not with and without using String Handling Functions. Transpose of a matrix and sorting of names using arrays.

UNIT III   (18 Periods)

User-defined Functions, Structures and Unions, Pointers

Programming Exercises for Unit - III: Functions - Recursive functions to find factorial & GCD (Greatest Common Divisor), string operations using pointers and pointer arithmetic. Swapping two variable values. Sorting a list of student records on register number using array of pointers

UNIT IV   (18 Periods)

File Management in C,Dynamic Memory Allocation,Preprocessor

Programming Exercises for Unit - IV: Operations on complex numbers, and to read an input file of marks and generate a result file, sorting a list of names using command line arguments. Copy the contents of one file to another file. Allocating memory to variables dynamically.

Text Book:

1. **Programming in ANSI C by E.Balaguruswamy,Fifth Edition.**

References:

1. Kernighan BW and Dennis Ritchie M, "C programming language", 2nded, Prentice Hall.
2. Yashavant P. Kanetkar, "Let us C", BPB Publications.
3. Herbert Schildt, "C: The Complete Reference", 4th edition, Tata Mcgraw-Hill.
4. Ashok N.Kamthane, "Programming in C", PEARSON 2nd Edition.

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Physics Laboratory
I B.Tech– Semester (Code: 18PHL01)
(COMMON TO ALL BRANCHES)

Lectures	0	Tutorial	0	Practical	3	Credits	1
Continuous Internal Assessment			50	Semester End Examination (3hours)			50

LIST OF EXPERIMENTS
1. Determination of acceleration due to gravity at a place using compound pendulum.
2. Study the variation of intensity of magnetic field along the axis of a circular coil using Stewart-Gee's apparatus.
3. Determination of thickness of thin wire using air wedge interference bands.
4. Determination of radius of curvature of a Plano convex lens performing Newton's rings.
5. Determination of wavelengths of mercury spectrum using grating normal incidence method.
6. Determination of dispersive power of a given material of prism using prism minimum deviation method.
7. Draw the resonant characteristic curves of L.C.R. series circuit and calculate the resonant frequency.
8. Draw the characteristic curves of a photocell and calculate the maximum velocity of electron.
9. Verify the laws of transverse vibration of stretched string using sonometer.
10. Determine the rigidity modulus of the given material of the wire using Torsional pendulum.
11. Draw the load characteristic curves of a solar cell.
12. Determination of Hall coefficient of a semiconductor.
13. Determination of voltage and frequency of an A.C. signal using C.R.O.
14. Determination of Forbidden energy gap of Si &Ge.
15. Determination of wavelength of laser source using Diode laser.

Any three experiments are virtual

TEXT BOOK:
1. "Engineering physics laboratory manual"P.Srinivasarao&K.Muralidhar,Himalaya publications.

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Basic Electrical and Electronics Engineering Lab
(Common for CSE,IT,ME branches)
I B.Tech – I Semester (Code: 18EEL01)

Lectures	0	Tutorial	0	Practical	3	Credits	1
Continuous Internal Assessment	:	50	Semester End Examination (3 Hours)	:	50		

Lab experiments

1. Verification of KCL and KVL
2. Verification of Superposition theorem
3. Verification of Thevenin's theorem
4. Verification of Norton's theorem
5. Parameters of choke coil
6. Measurement of low and medium resistance using volt ampere method
7. OC & SC test of single phase transformer
8. Load test on single phase transformer
9. V-I characteristics of PN junction Diode
10. V-I characteristics of Zener Diode
11. Characteristics of CE Configuration
12. Transfer and Drain Characteristics of JFET
13. Calculation of Ripple factor using Half wave rectifier
14. Calculation of Ripple factor using Full wave rectifier
15. Non linear wave shaping – clippers/clampers

Note: Minimum 10 experiments should be carried.

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Problem Solving using Programming(Lab)

I B.Tech – II Semester (Code: 18CSL01)

Lectures	0	Tutorial	0	Practical	3	Credits	1
Continuous Internal Assessment	:	50	Semester End Lab Examination (3 Hours)			:	50

1. A program for electricity bill taking different categories of users, different slabs in each category. (Using nested if-elsestatement).

Domestic Customer:		
Consumption Units	**Rate of Charges(Rs.)**	
0 – 200	0.50 per unit	
201 – 400	100 plus	0.65 per unit
401 – 600	230 plus	0.80 per unit
601 and above	390 plus	1.00 per unit
Commercial Customer:		
Consumption Units	**Rate of Charges(Rs.)**	
0 – 100	0.50 per unit	
101 – 200	50 plus	0.6 per unit
201 – 300	100 plus	0.70 per unit
301 and above	200 plus	1.00 per unit

2. Write a C program to evaluate the following (usingloops):
   a) $1 + x^2/2! + x^4 / 4! + $ …upto tenterms
   b) $x + x^3/3! + x^5/5! + $ … upto ten terms
3. Write a C program to check whether the given numberis
   a) Prime ornot.
   b) Perfect or Abundant orDeficient.
4. Write a C program to display statistical parameters (using one – dimensionalarray).
   a) Mean
   b) Mode
   c) Median
   d) Variance.
5. WriteaCprogramtoreadalistofnumbersandperformthefollowingoperations
   a) Print thelist.
   b) Delete duplicates from thelist.
   c) Reverse thelist.
6. Write a C program to read a list of numbers and search for a given number using Binary search algorithm and if found display its index otherwise display the message "Element not found in theList".

7. Write a C program to read two matrices and compute their sum and product.

8. Write a C program to read list of student names and perform the following operations
   a) To print the list of names.
   b) To sort them in ascending order.
   c) To print the list after sorting.

9. Write a C program that consists of recursive functions to

   a) Find factorial of a given number
   b) Solve towers of Hanoi with three towers (A, B & C) and three disks initially
      on tower A.

10. A Bookshop maintains the inventory of books that are being sold at the shop. The list includes details such as author, title, price, publisher and stock position. Whenever a customer wants a book the sales person inputs the title and the author, and the system searches the list and displays whether it is available or not. If it is not, an appropriate message is displayed, if it is, then the system displays the book details and request for the number of copies required ,if the requested copies are available the total cost of the requested copies is displayed otherwise the message "required copies not in stock" is displayed. Write a program for the above in structures with suitable functions.

11. Write a C program to read a data file of students' records with fields(Regno, Name, M1,M2,M3,M4,M5) and write the successful students data (percentage > 40%) to a data file.

12. Write a C program to read a file as command line argument and count the given word frequency in a file

PROBABILITY & STATISTICS

(Common for all branches)

II B.Tech – III Semester (Code: 18MA003)

Lectures :	**4** Periods / Week	Continuous Internal Assessment :	**50** Marks
Final Exam :	**3** hours	Semester End Exam :	**50** Marks

UNIT-I   [12 Hours]

Continuous Random Variables, Normal Distribution, Normal Approximation to the Binomial Distribution, Uniform Distribution, Gamma Distribution and its applications, Beta Distribution and its applications, Joint Distributions (Discrete),Joint Distributions (Continuous).Populations and Samples, Law of large numbers, Central limit theorem and its applications, The sampling distribution of the mean (σ unknown),The sampling distribution of the variance.

(Sections 5.1, 5.2, 5.3, 5.5,5.7, 5.8, 5.10, 6.1, 6.2, 6.3, 6.4 of Text Book [1])

UNIT-II   [12 Hours]

Point estimation, Interval estimation, Tests of Hypotheses, Null Hypothesis and Tests of hypotheses, Hypothesis concerning one mean, Comparisons-Two independent Large samples, Comparisons-Two independent small samples, Paired sample t test.

(Sections 7.1,7.2, 7.4, 7.5, 7.6, 8.2, 8.3, 8.4 of Text Book [1])

UNIT-III   [12 Hours]

The Estimation of variances, Hypotheses concerning one variance, Hypotheses Concerning two variances, Estimation of proportions, Hypotheses concerning one proportion, Hypotheses concerning several proportions, Procedure for Analysis of Variance (ANOVA) for comparing the means of k (>2) groups- one way classification(Completely randomized designs), Procedure for Analysis of Variance (ANOVA) for comparing the means of k (>2) groups- two way classification(Randomized block designs).
(Sections 9.1, 9.2, 9.3, 10.1, 10.2, 10.3, 12.2, 12.3 of Text Book [1])

UNIT-IV   [12 Hours]

Multivariate Analysis: The concept of bivariate relationship, scatter diagram, Pearson‟s correlation and correlation matrix. Simple linear regression model and assumptions, Least Squares Estimation of the parameters of the model, Testing the significance of the model. Regression versus Correlation, Multiple linear regression model with k explanatory variables and assumptions of the model. Least Square Estimation of regression coefficients. Concept of the coefficient of determination R^2. Test for significance of the regression model and individual regression coefficients. Applications of multiple regression analysis.

(1st and 2nd Chapters of Text Book [2])1

Text Book(s) :   **1.** Miller & Freund's "Probability and Statistics for Engineers", Richard A. Johnson,8th Edition, PHI.
   2. Introduction to Linear Regression Analysis, Douglas C. Montgomery, E.A. Peck and G.G. Vining, 3rd edition, Wiley.

References :   1. R.E Walpole, R.H. Myers & S.L. Myers „Probability & Statistics for Engineers and Scientists", 6th Edition, PHI.
   2. Fundamentals of Mathematical Statistics, S.C.Gupta and V.K.Kapoor,11th Edition, Sultan Chand & Sons.
   3. Murray R Spiegel, John J.Schiller, R. AluSrinivasa, „Probability &Satistics",Schaum's outline series.
   4. K.V.S.Sarma,„Statistics Made Simple – Do it yourself on PC",Prentice Hall India, Second Edition, 2015.

DATA STRUCTURES
II B.Tech – III Semester (Code: 18CS302)

Lectures :	**4** Periods / Week	Continuous Internal Assessment :	**50** Marks
Final Exam :	**3** hours	Semester End Exam :	**50** Marks

UNIT-I   **14** Periods

Algorithm Analysis: Mathematical Background, Model, what to Analyze, Running Time Calculations.
Lists: Abstract Data Types, The List ADT, Singly Linked List ADT, Doubly Linked List ADT, Circular Linked List ADT, Polynomial ADT: addition, multiplication operations.

UNIT-II   **14** Periods

Stacks and Queues: The Stack ADT and its applications such as Infix to Postfix expression conversions, Evaluation of Postfix expressions. The Queue ADT, Queue Application-Radix sort.
Basic Sortings Techniques: Bubble sort, Selection sort, Insertion sort, Shell sort

UNIT-III   **13** Periods

Trees: Preliminaries, Binary Trees, Expression trees, The Search Tree ADT, Binary Search Trees, Splay Trees, Implementations, AVL Trees-Single Rotations, Double rotations, Implementations.

UNIT-IV   **13** Periods

Hashing: General Idea, Hash Function, Separate Chaining, Open Addressing.
Priority Queues (Heaps): Model, Simple implementations, Binary Heap, Heap Sort.
Disjoint Set ADT: Dynamic equivalence problem, Basic Data Structure, Smart Union Algorithms, Path Compression.

Text Book(s) :	1.	Mark Allen Weiss, "Data Structures and Algorithm Analysis in C", Second Edition, Pearson Education.
References :	1.	Y.Langsam, M.J.Augeustein and A.M.Tenenbaum, "Data Structures Using C", Pearson Education Asia, 2004. Richard F.Gilberg, Behrouz A. Forouzan, "Data Structures – A
	2.	Pseudocode Approach with C", ThomsonBrooks / COLE, 1998. Aho, J.E. Hopcroft and J.D. Ullman, "Data Structures and Algorithms", Pearson Education Asia, 1983.

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DISCRETE MATHEMATICS

II B.Tech – III Semester (Code:18CS303)

Lectures :	**4** Periods / Week	Continuous Internal Assessment :	**50** Marks
Final Exam :	**3** hours	Semester End Exam :	**50** Marks

UNIT-I   16 Periods

Set Theory: Sets and subsets, Venn Diagrams, Operations on sets, laws of set theory, Power sets and products, Partition of sets, The principle of inclusion - Exclusion.
Relations: Definition, Types of relation, Composition of relations, Domain and range of a relation, Representation of Relations, Operations of relation, Special properties of a binary relation, Equivalence Relations and Partial Ordering Relations , POSET diagram and lattice, Paths and Closures.
Functions:
Definition and types of functions, Composition, Inverse and Identity of functions.

UNIT-II   15 Periods

Logic: Fundamentals of Logic, Logical Inferences, Methods of Proof of an implication, First order Logic & Other methods of proof, Rules of Inference for Quantified propositions, Mathematical Induction.
Elementary Combinatorics: Basics of Counting, Combinations and Permutations, Enumerating Combinations and Permutations with repetitions.

UNIT-III   15 Periods

Recurrence relations: Generating functions of sequences, Calculating Coefficients of Generating Functions. Solving recurrence relations by Substitution and generating functions.   The methods of characteristic roots, solutions of inhomogeneous recurrence relations.

UNIT-IV   14 Periods

Graphs: Basic concepts, Directed Graphs and Adjacency Matrices, Application: Topological Sorting. Isomorphism and Sub graphs, Planar Graphs, Euler's Formula; Multigraphs and Euler Circuits, Hamiltonian Graphs, Chromatic Numbers, The Four Color Problem.

Text Book(s) :	1.	Toe L.Mott, Abraham Kandel& Theodore P.Baker, "Discrete Mathematics for Computer Scientists & Mathematicians", PHI 2nd edition.
References :	1.	C.L. Liu, "Elements of Discrete Mathematics".
	2.	Rosen, "Discrete Mathematics".

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OBJECT ORIENTED PROGRAMMING

II B.Tech – II Semester (Code: 18CS304])

Lectures :	4 Periods / Week	Continuous Internal Assessment :	50 Marks
Final Exam :	3 hours	Semester End Exam :	50 Marks

UNIT-I   16 Periods

The History and Evolution of Java
An Overview of Java
Data Types, Variables and Arrays
Operators
Control Statements
Introducing Classes
A Closer Look at Methods and Classes

UNIT-II   14 Periods

Inheritance
Packages and Interfaces
Strings: String Constructors, Program using 10 String methods
StringBuffer class, Program using 10 StringBuffer methods Introducing StringBuilder class.
Type Wrappers, Auto boxing/unboxing.
Collections: Collections Overview, Names of Collection Interfaces, Classes. Programs using Collection classes LinkedList<String>, ArrayList<String>

UNIT-III   16 Periods

Exception Handling
Multithreaded Programming
I/O: I/O Basics, Reading Console Input, Writing Console Output, The PrintWriter class, Reading and Writing Files, Automatically Closing a File

UNIT-IV   14 Periods

The Applet Class: Applet Architecture, An Applet Skeleton, Applet program to draw shapes, setting Color, Font using Graphics class
Event Handling:
Introducing the AWT: Window Fundamentals, Program using AWT components Label, TextField, TextArea, Checkbox, CheckboxGroup, Button, Program using FlowLayout, GridLayout, BorderLayout.

GUI Programming with Swing: The Origins of Swing, Advantages of Swing over AWT, The MVC Connection, Program using Swing Components JLabel, JTextField, JTextArea, JCheckbox, JButton, JTabbedPane, JTable, JTree, JComboBox

Text Book(s) :   1. "Java The Complete Reference", 9th Edition, Herbert Schildt, TMH Publishing Company Ltd, New Delhi.

OPERATING SYSTEMS
II B.Tech – III Semester (Code: 18CS305)

Lectures :	**4** Periods / Week	Continuous Internal Assessment :	**50** Marks
Final Exam :	**3** hours	Semester End Exam :	**50** Marks

UNIT-I   16 Periods

Introduction: What OSs Do, Computer System Operation, Storage structure, OS Structure, OS Operations.

Operating-System Structures: OS Services, User and operating system Interface, System Calls, Types of System Calls, System Programs, OS Design and Implementation, OS Structure.

Processes: Process Concept, Process Scheduling, Operations on Processes, Inter-process Communication.

Threads: Overview, Multicore Programming, Multithreading Models.

[Sections:1.1, 1.2.1, 1.2.2,1.4,1.5, 1.5.1,2.1, 2.2,2.3,2.4, 2.5, 2.6, 2.7,2.7.1,2.7.2,2.7.3,2.7.4 3.1, 3.2,3.3,3.4, 4.1,4.2,4.3]

UNIT-II   15 Periods

CPU Scheduling: Basic Concepts, Scheduling Criteria, Scheduling Algorithms.

Process Synchronization: Background, The Critical-Section Problem, Peterson's Solution, Synchronization Hardware, Mutex Locks, Semaphores, Classic problems of Synchronization, Monitors.

[Sections : 5.1,5.2,,5.3,5.4,5.5,5.6,5.7,5.8, 6.1,6.2,6.3]

UNIT-III   15 Periods

Deadlocks: System Model, Deadlock Characterization, Methods for Handling Deadlocks, Deadlock Prevention, Avoidance, Detection and Recovery.

Main Memory: Background, Swapping, Contiguous Memory Allocation, Segmentation, Paging, Structure of Page Table.

Virtual-Memory : Background, Demand Paging, Copy-on-Write, Page Replacement, Allocation of Frames, Thrashing, Other Considerations.

[Sections; 7.1,7.2,7.3,7.4,7.5,7.6,7.7,8.1,8.2,8.3,8.4,8.5,8.6,9.1, 9.2,9.3,9.4,9.5,9.6,9.9]

UNIT-IV   14 Periods

File System Interface: File concept, Access Methods, Directory and Disk Structure,

File System Implementation: File System Structures, Directory Implementation, Allocation Methods

Protection: Goals of Protection, Principles of Protection, Domain of Protection- Domain Structure, Access Matrix, Implementation of Access Matrix.

Mass Storage Structure: Over View, Disk Structure, Disk Scheduling, Disk Management, RAID levels

[Sections:10.1,10.2,10.4,10.5,10.7,11.1,11.2,11.3,11.5,12.1,12.3,12.4,14.1,14.2,14.3, 14.3.1, 14.4,14.5

Text Book(s) : 1. Silberschatz & Galvin, "Operating System Concepts", 9th edition, John Wiley & Sons (Asia) Pvt.Ltd.

References : 1. William Stallings, "Operating Systems – Internals and Design Principles", 5/e, Pearson.

2. Charles Crowley, "Operating Systems: A Design-Oriented Approach", Tata McGraw Hill Co., 1998 edition.

3.   Andrew S.Tanenbaum, "Modern Operating Systems", 2nd edition, PHI

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MICROPROCESSOR & MICROCONTROLLERS
II B.Tech – III Semester (Code: 18CS306)

Lecture: **4** Periods, Practical:**2** Periods	Continuous Internal Assessment :	**50** Marks
Final Exam : **3** hours	Semester End Exam :	**50** Marks

UNIT-I   16 Periods

The 8086 Microprocessor Family, The 8086 Internal Architecture, **Introduction to Programming the 8086:** 8086 Family Assembly Language Programming; Implementing standard Program Structures in 8086 Assembly language.

UNIT-II   15 Periods

Writing and Using Procedures: Introduction, The 8086 CALL and RET instructions, The

8086 Stack, A Near Procedure CALL and Example, Another Look at Stack Operation during CALL and RET, Using PUSH and POP to save register content, Passing Parameters to and from Procedures, Writing and debugging programs containing Procedures, Reentrant and Recursive Procedures, Recursive Procedure example, Writing and Calling Far Procedures. **Writing and Using Assembler Macros**.

UNIT-III   14 Periods

8086 Interrupts and Interrupt Applications: 8086 Interrupts and Interrupts Responses.
8086 System Connections & Timing: The Basic 8086 Microcomputer System, 8086 Bus activities during the Read and Write Machine Cycles, 8086 pin Diagram.
The 8086 String Instructions.

UNIT-IV   15 Periods

Interfacing Peripherals and Applications: Interfacing the Microprocessor to the Keyboard, Alphanumeric displays, 8259 Priority Interrupt Controller, 8237 DMA Controller.
The 8051 Microcontrollers – Assembly language Programming- JUMP, LOOP, CALL instructions. Addressing Modes, Arithmetic, Logic, Single – bit instructions.

LIST OF EXPERIMENTS

1. Write a 8086 assembly language program to arrange the given numbers in ascending order.

2. Write a 8086 assembly language program to find the given number is prime or not.

3. Write a 8086 assembly language program to convert BCD number into binary using registers as pointers.

4. Write a 8086 assembly language program to calculate nCr by using near procedures.

5. Write a 8086 assembly language program for comparison of two strings.

6. Write a 8086 assembly language program to move a String from one segment to another segment.

7. Assume that 5 BCD data items are stored in RAM locations starting at 40H. Write a 8051 microcontroller program to find the sum of all the numbers. The result must be in BCD.

8. Write a 8051 microcontroller program to count the number of positive elements, negative elements and zeros in the given array.

Text Book(s) :	1. Douglas V. Hall, "Microprocessors and Interfacing", Tata McGraw-Hill, Revised Second Edition.
References :	1. Yu-cheng Liu, Glenn A. Gibson, "Microcomputer systems: The 8086 /8088 Family architecture, Programming and Design", Second edition, Prentice Hall of India, 2003.
	2. Barry B. Brey, "The Intel Microprocessors, 8086/8088, 80186/80188, 80286, 80386, 80486, Pentium, PentiumPro Processor, Pentium II, Pentium III, Pentium IV, Architecture, Programming & Interfacing", Sixth Edition, Pearson Education Prentice Hall of India, 2002.

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UNIX PROGRAMMING LAB

II B.Tech – III Semester (Code: 18CSL31])

Lecture: **2** Periods, Practical:**3** Periods	Continuous Internal Assessment :	**50** Marks
Final Exam : **3** hours	Semester End Exam :	**50** Marks

UNIT-I   [8] Periods

Directory commands – pwd, cd, mkdir, rmdir commands. The dot (.) and double dots (..) notations to represent present and parent directories and their usage in relative path names. File related commands –Editing with vi, cat, mv, rm, cp , wc . File attributes and permissions and knowing them. The ls command with options. Changing file permissions: (chmod) the relative and absolute permissions changing methods. Recursively changing file permissions. Directory Permissions. Other Basic commands: cal, date, df, du, find, jobs, kill ,less and more, ps, set, wc, who.

LIST OF EXPERIMENTS

1. Obtain the following results (i) To print the name of operating system (ii) To print the login name   (iii) To print the host name
2. Find out the users who are currently logged in and find the particular user too.
3. Display the calendar for (i)   Jan 2000 (ii) Feb 1999 (iii) 9th month of the year 7 A.D (iv) For the current month (v) Current Date Day Abbreviation , Month Abbreviation along with year
4. Display the time in 12-Hour and 24 Hour Notations.
5. Display the Current Date and Current Time.
6. Display the message "GOOD MORNING" in enlarged characters.
7. Display the name of your home directory.
8. Create a directory SAMPLE under your home directory.
9. Create a subdirectory by name TRIAL under SAMPLE.
10. Change to SAMPLE.
11. Change to your home directory.
12. Change from home directory to TRIAL by using absolute and relative pathname.
13. Remove directory TRIAL.
14. Create a directory TEST using absolute pathname.
15. Using a single command change from current directory to home directory.
16. Remove a directory using absolute pathname.
17. Create files myfile and yourfile under Present Working Directory.
18. Display the files myfile and yourfile.
19. Append more lines in the myfile and yourfile files.
20. How will you create a hidden file?.
21. Copy myfile file to emp.
22. Write the command to create alias name for a file.
23. Move yourfile file to dept.
24. Copy emp file and dept file to TRIAL directory
25. Compare a file with itself.
26. Compare myfile file and emp file.

UNIT-II   [8] Periods

The Stream editor(sed):Line addressing, multiple instructions, context addressing, writing selected lines to a file, text editing ,substitution, basic regular expressions.

File Handling and Text Processing utilities: grep, egrep, fgrep.

AWK: sample awk filtering , splitting a line into fields, formatting output, variables and expressions, comparison operators, number processing, storing awk programs in a file, the BEGIN and END sections, Built in variables and arrays, control structures.

LIST OF EXPERIMENTS

1. A. **Create the following file as sed.lab: unix is great os. unix is open source. unix is free os. learn operating system. Unix linux which one you choose.**(*Each sentence in a line*)
   1. Replace 'unix' with 'linux'.
   2. Replace only the third (3rd) instance of 'unix' with 'linux'.
   3. Try sed 's/unix/linux/g' sed.lab.
   4. Replace 'unix' with 'linux' but only on line 3.
   5. Add a new line, 'Actually Windows is best' after the second line.

   B.
   1. Viewing a range of lines of a document
   2. Viewing the entire file except a given range
   3. Viewing non-consecutive lines and ranges
   4. Replacing words or characters inside a range
   5. Using regular expressions
   6. Viewing lines containing with a given pattern
   7. Inserting spaces in files
   8. Performing two or more substitutions at once

2.
   1. Design a command **"wishme"** that will great you "good morning","good afternoon", according to current time.
   2. Design a command **"fags"** thats will list the files and their ages, to date.
   3. Design a command **"word-freq"** that will print the words and number of occurrences of that word in the given text.

UNIT-III   [8] Periods

Shell programming:shell,functions of shell,metacharacters,input redirections and output redirections,pipes, shell as a programming language,shell variables,predefined local variables,predefined environment variables,arithmetic and conditional expressions ,control structures,positional parameters,passing command line arguments,built in shell commands,shell programs,functions and arrays.

LIST OF EXPERIMENTS

1.
   A. Design a command **" which"** that prints the path of the command given as Argument

B. Design a command **"filelist[-c <char>]"** which prints all file names beginning with The charter specified as argument to the command ,if the position is not specified It should print all the file names.

C. Design a command **getline[-f <filename> -n <line number>]** which prints the line number **lineno** in the file specified with -f option.If the line number is not specified it should list all the lines in the given file

D. Design a command **monthly-file[-m <month>]** which list the files created in a given month where month is argument to be command.if the options is not specified it list the files in all the months.

2.

A. Design a command **listlines[-f <file name> -v <varname>]** which prints the line from the given file **file name** ,which containing the variable **varname**.if **arname** Is not specified it should list ,all the lines.

B. Design a command **avg[-n <colon> -f <file name>]** which prints the average of the given column in a file where **colon** and **file name** are arguments to the commands

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UNIT-IV   [8] Periods

</div>

File management System calls:Regular File management system calls: open(), read(), write(), lseek(), close(), unlink(), stat(), getdents().

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LIST OF EXPERIMENTS

</div>

1. Write a C program to copy data from source file to destination file, where the file names are provided as command-line arguments.

2. Write a C program that reads every 100th byte from the file, where the file name is given as command-line argument.

3. Write a C program to display information of a given file which determines the type of file and inode information, where the file name is given as command-line arguments.

Text Book(s) :
1. UNIX Concepts and Applications, Sumitabha Das, 4th edition, TATA McGraw Hill.

2. "UNIX for programmers and users", 3rd edition, Graham Glass,

   King Ables, Pearson education.

References :
1. "The Design of UNIX operating System", Maurice J.Bach, PHI.

2. "Advanced programming in the UNIX environment", W Richard Stevens, 2nd Edition, Pearson education.

3. "UNIX programming environment", Kernighan and pike, Pearson Education.

4. "Your UNIX the ultimate guide, Sumitabha Das, TMH, 2nd edition.

5   "Advanced UNIX programming", Marc J. Rochkind, 2nd edition, Pearson Education.

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DATA STRUCTURES LAB

II B.Tech – III Semester (Code: 18CSL32)

Practicals :	**3** Periods / Week	Continuous Internal Assessment :	**50** Marks
Final Exam :	**3** hours	Semester End Exam :	**50** Marks

LIST OF EXPERIMENTS

1. Write a program to perform the following operations on Array List 1.Creation, 2.Insertion, 3.Deletion, 4.Search, 5.Display.
2. Write a program that reads two lists of elements, prints them, reverses them, prints the reverse list, sort the lists, print the sorted lists, merges the list, prints merge list using array list.
3. Write a program to perform the following operations on Single Linked List. a).Creation b).Insertion c).Deletion d).Search e).Display.
4. Write a program to perform the following operations on Doubly Linked List. a).Creation b).Insertion c).Deletion d).Search e).Display.
5. Write a program to perform addition and multiplication of two polynomials using single Linked List.
6. Write a program to convert the given infix expression into postfix expression using stack.
7. Write a program to evaluate the postfix expression using stack.
8. Write a program that performs Radix sort on a given set of elements using queue.
9. Write a program to read n numbers in an array. Redisplay the arraylist with elements being sorted in ascending order using the following techniques (a) Bubble Sort (b) Selection Sort (c) Insertion Sort (d) Shell Sort.
10. Write a program to demonstrate Binary Expression tree.
11. Write a program to perform Binary Search tree operations and traversals.
12. Write a program to implement AVL tree that interactively allows (a) Insertion (b) Deletion (c) Find_min (d) Find_max.
13. Write a program to read n numbers in an array. Redisplay the arraylist with elements being sorted in ascending order using Heap Sort.
14. Write a program to find an element using Open Addressing.
15. Write a program to perform the following operations on Disjoint Set. a). Make-Set b). Find-Set c). Union.

Text Book(s) :	1. Mark Allen Weiss, "Data Structures and Algorithm Analysis in C", Second Edition, Pearson Education.
References :	1. Y.Langsam, M.J.Augeustein and A.M.Tenenbaum, "Data Structures Using C", Pearson Education Asia, 2004.
	2. Richard F.Gilberg, Behrouz A. Forouzan, "Data Structures – A Pseudocode Approach with C", ThomsonBrooks / COLE, 1998.

OBJECT ORIENTED PROGRAMMING LAB
II B.Tech – III Semester (Code: 18CSL33)

Practicals :	**3** Periods / Week	Continuous Internal Assessment :	**50** Marks
Final Exam :	**3** hours	Semester End Exam :	**50** Marks

LIST OF EXPERIMENTS

1. Write a Java program to declare, initialize and accessing the elements of Single dimensional Arrays, Multidimensional Arrays.
2. Write a Java program to demonstrate recursion.
3. Write a Java program to demonstrate static member, static method and static block.
4. Write a Java program to demonstrate method overloading and method overriding using simple inheritance.
5. Write a Java program to demonstrate multiple inheritance using interfaces.
6. Write a Java program to demonstrate packages.
7. Write a Java program to demonstrate String class methods.
8. Write a Java program to create user defined exception class, use couple of builtin Exception classes.
9. Write a Java program to demonstrate inter-thread communication.
10. Write an Applet program passing parameters to Applet, using Graphics,Color and Font classes.
11. Write a Java program to demonstrate handling Action events, Item events, Key events, Mouse events, MouseMotion events.
12. Write a GUI application which uses AWT components Label, TextField, TextArea, Checkbox, CheckboxGroup, Button.
13. Write a GUI application using JTable, JTree, JComboBox.

Text Book(s) :   1. "Java The Complete Reference", 9th Edition, Herbert Schildt, TMH Publishing Company Ltd, New Delhi.

OPERATION RESEARCH
(Common for all branches)
II B.Tech – I Semester (Code: 18MA05)

Lectures :	**4** Periods / Week	Continuous Internal Assessment :	**50** Marks
Final Exam :	**3** hours	Semester End Exam :	**50** Marks

UNIT-I [12 Hours]

LINEAR PROGRAMMING PROBLEM:

Introduction; Graphical Solution Method; Some exception cases; General Linear Programming Problem; Canonical and Standard Forms of L.P.P; The Simplex Method: Introduction, Fundamental Properties of Solutions(without Proofs); the Computations Procedure, Artificial Variable Techniques (Big-M method), Problem of Degeneracy.
[Sections: 2.1; 2.3; 2.4; 2.5; 2.6; 3.1; 3.2; 3.3; 3.5; 3.6]

UNIT-II [12 Hours]

GAMES AND STRATEGIES: Introduction; Two-person Zero –Sum Games; The Maximin-Minimax Principle; Games Without Saddle Points-Mixed Strategies; Solution of 2x2 Rectangular Games; Graphical Method; Dominance Property; Algebraic Method for mxn Games; Limitations and Extensions.
[Sections: 9.1; 9.2; 9.3; 9.4; 9.5; 9.6; 9.7; 9.8; 9.12]

UNIT-III [12 Hours]

INTEGER PROGRMMING PROBBLEM: Introduction, Gomory's All-Integer Programming Problem Method; Branch and Bound Method.
DYNAMIC PROGRAMMING: Introduction, the Recursive Equation Approach, Characteristics of Dynamic Programming, Dynamic Programming Algorithm, Solution of Discrete Dynamic Programming Problem.
[Sections: 11.1; 11.2; 11.4; 12.1; 12.2; 12.3; 12.4; 12.5]

UNIT-IV [12 Hours]

QUEUING THEORY: Introduction, Queueing System, Characteristic of Queueing System, Symbols and Notations, Poisson Process and Exponential Distribution, Classification of Queues, Definition of Transient and Steady States, Poisson Queues; The M/M/I Queueing System: Model-I (M/M/I): (∞/FIFO) , Model-II (M/M/I): (∞/ SIFO) , Model-III (M/M/I): (N/FIFO), Model-IV (Birth-Death Process).
[Sections: 17.1; 17.2; 17.3; 17.4; 17.5; 17.6; 17.7; 17.8;17.8.1]

Text Book(s) :	1. Kanthi Swarup, P.K Gupta & Man Mohan, 'Operations Research'
References :	1. SD.Sharma, "Operations Research", Kedarnath, Ramnath& Co.,
	2. Hamdy A.*Taha*, *Operations Research*: An introduction, Pearson Prentice Hall, New Jersey.

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WEB TECHNOLOGIES
II B.Tech – IV Semester (Code: 18CS402)

Lectures :	**4** Periods / Week	Continuous Internal Assessment :	**50** Marks
Final Exam :	**3** hours	Semester End Exam :	**50** Marks

UNIT-I   16 Periods

HTML5: Fundamentals of HTML, Working with Text, Organizing Text in HTML, Working with Links and URLs, Creating Tables, Working with Images, Colors, and Canvas, Working with Forms.

UNIT-II   14 Periods

CSS: Overview of CSS, Backgrounds and Color Gradients in CSS, Fonts and Text Styles, Creating Boxes and Columns Using CSS, Displaying, Positioning, and Floating an Element, List Styles, Table Layouts.
Dynamic HTML: Overview of JavaScript, JavaScript Functions, Events, Image Maps, and Animations.

UNIT-III   14 Periods

Dynamic HTML(Cont..): JavaScript Objects, Working with Browser Objects, Working with Document Object.
Document Object Model: Understanding DOM Nodes, Understanding DOM Levels, Understanding DOM Interfaces - Node , Document, Element, Attribute.

UNIT-IV   16 Periods

XML: Working with Basics of XML, Implementing Advanced Features of XML, Working with XSLT.
AJAX: Overview of AJAX, Asynchronous Data Transfer with XMLHttpRequest, Implementing AJAX Frameworks, Working with jQuery.

Text Book(s) :	1. Kogent Learning Solutions Inc.,HTML5 Black Book: Covers CSS3, Javascript, XML, XHTML, Ajax, PHP and Jquery.
References :	1. Harvey M. Deitel and Paul J. Deitel,"Internet & World Wide Web How to Program", 4/e,Pearson Education.
	2. Jason Cranford Teague, "Visual Quick Start Guide CSS, DHTML &AJAX", 4e, Pearson Education.
	3. Tom NerinoDoli smith, "JavaScript & AJAX for the web", Pearson Education 2007.
	4. Joshua Elchorn, "Understanding AJAX", Prentice Hall 2006.

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DATABASE MANAGEMENT SYSTEM

II B.Tech – IV Semester (Code:18CS403)

Lectures :	**4** Periods / Week	Continuous Internal Assessment :	**50** Marks
Final Exam :	**3** hours	Semester End Exam :	**50** Marks

UNIT-I [16] Periods

Databases and Database Users: Introduction - An Example - Characteristics of the Database Approach – Actors on the Scene - Workers behind the Scene - Advantages of Using the DBMS Approach.

Database System Concepts and Architecture : Data Models, Schemas, and Instances - Three-Schema Architecture and Data Independence - Database Languages and Interfaces - The Database System Environment -Centralized and Client/Server Architectures for DBMSs.

Data Modeling Using the Entity-Relationship (ER) Model : Using High-Level Conceptual Data Models for Database Design - An Example Database Application - Entity Types, Entity Sets, Attributes, and Keys -Relationship Types, Relationship Sets, Roles, and Structural Constraints - Weak Entity Types - Refining the ER Design for the COMPANY Database - ER Diagrams, Naming Conventions, and Design Issues

UNIT-II [15] Periods

The Relational Algebra and Relational Calculus : Unary Relational Operations: SELECT and PROJECT -Relational Algebra Operations from Set Theory - Binary Relational Operations: JOIN and DIVISION – Additional Relational Operations - The Tuple Relational Calculus - The Domain Relational Calculus
Schema Definition, Constraints, Queries, and Views : SQL Data Definition and Data Types – Specifying Constraints in SQL - Schema Change Statements in SQL - Basic Queries in SQL - More Complex SQL Queries - INSERT, DELETE, and UPDATE Statements in SQL - Views (Virtual Tables) in SQL

UNIT-III [15] Periods

Indexing Structures for Files: Types of Single-Level Ordered Indexes Multilevel Indexes - Dynamic Multilevel Indexes Using B-Trees and B+-Trees.
Functional Dependencies and Normalization for Relational Databases : Informal Design Guidelines for Relation Schemas - Functional Dependencies - Normal Forms Based on Primary Keys - General Definitions of Second and Third Normal Forms, Boyce-Codd Normal Form.
Relational Database Design Algorithms and Further Dependencies : Properties of Relational Decompositions - Algorithms for Relational Database Schema Design - Multi-valued Dependencies and Fourth Normal Form – Join Dependencies and Fifth Normal Form.

UNIT-IV   [14] Periods

Introduction to Transaction Processing Concepts and Theory: Introduction to Transaction Processing -Transaction and System Concepts - Desirable Properties of Transactions - Characterizing Schedules Based on Recoverability - Characterizing Schedules Based on Serializability

Concurrency Control Techniques: Two-Phase Locking Techniques for Concurrency Control – Concurrency Control Based on Timestamp Ordering – Multi version Concurrency Control Techniques - Validation (Optimistic) Concurrency Control Techniques - Granularity of Data Items and Multiple Granularity Locking

Database Recovery Techniques : Recovery Concepts - Recovery Techniques Based on Deferred Update - Recovery Techniques Based on Immediate Update - Shadow Paging

Text Book(s) :	1.	Fundamentals of Database Systems, Ramez Elmasri and Navathe Pearson Education, 6th edition.
References :	1.	Introduction to Database Systems, C.J.Date Pearson Education
	2.	Database Management Systems, Raghu Ramakrishnan, Johannes Gehrke, TATA McGraw Hill 3rd Edition
	3.	Database System Concepts, Silberschatz, Korth, McGraw hill, 5th edition.

COMPUTER ORGANIZATION

II B.Tech – IV Semester (Code: 18CS404)

Lectures :	**4** Periods / Week,	Continuous Internal Assessment :	**50** Marks
Final Exam :	**3** hours	Semester End Exam :	**50** Marks

UNIT-I	16 Periods

DATA REPRESENTATION: Data Types, Complements, Fixed-Point Representation, Floating-Point Representation, Other Binary Codes.

REGISTER TRANSFER LANGUAGE AND MICROOPERATIONS: Register Transfer Language, Register Transfer, Bus and Memory Transfers, Arithmetic Micro Operations, Logic Micro operations, Shift Micro Operations, Arithmetic Logic Shift Unit.

UNIT-II	15 Periods

BASIC COMPUTER ORGANIZATION AND DESIGN: Instruction Codes, Computer Registers, Computer Instructions, Timing and Control, Instruction Cycle, Memory-Reference Instructions, Input-Output and Interrupt, Complete Computer Description, Design of Basic Computer, Design of Accumulator Logic.

MICRO PROGRAMMED CONTROL: Control Memory, Address Sequencing, Micro program Example, Design of Control Unit.

UNIT-III	15 Periods

CENTRAL PROCESSING UNIT: General Register Organization, Stack Organization, Instruction Formats, Addressing Modes, Data Transfer and Manipulation, Program Control, Reduced Instruction Set Computer.

COMPUTER ARITHMETIC: Addition and Subtraction, Multiplication Algorithms, Division Algorithms, Floating-Point Arithmetic Operations, Decimal Arithmetic Unit, Decimal Arithmetic Operations.

UNIT-IV	14 Periods

THE MEMORY SYSTEM: Memory Hierarchy, Main Memory, Auxiliary Memory, Associative Memory, Cache Memory, Virtual Memory, Memory Management Hardware.

INPUT-OUTPUT ORGANIZATION: Peripheral Devices, Input-Output Interface, Asynchronous Data Transfer, Modes of Transfer, Priority Interrupt, Direct Memory Access, Input-Output Processor.

Text Book(s) :
1. Computer System Architecture, M.Morris Mano, 3rd Edition, Pearson/PHI.
2. Computer Organization, Carl Hamacher, ZvonksVranesic, SafeaZaky, 5th Edition, McGraw Hill.Computer Organization and Architecture, William Stallings, Sixth Edition, Pearson/PHI.
3. Structured Computer Organization – Andrew S. Tanenbaum, 4th Edition, PHI/Pearson.
4. Fundamentals of Computer Organization and Design, Sivarama Dandamudi, Springer International Edition.

TECHNICAL ENGLISH
(Common for all branches)
II B.Tech – IV Semester (Code: 18EL002)

Lectures :	**4** Periods / Week	Continuous Internal Assessment :	**50** Marks
Final Exam :	**3** hours	Semester End Exam :	**50** Marks

UNIT-I

1.1 Vocabulary Development: Familiarizing Idioms & Phrases
1.2 Grammar for Academic Writing: Making Requests
1.3 Language Development: Using Transition & Link words
1.4 Technical Writing: Letter Writing & Email Writing

UNIT-II

2.1 Vocabulary Development: Analogous words, Gender Sensitive language
2.2 Grammar for Academic Writing: Tenses: Simple Past /Present Perfect, The Future: Predicting & Proposing
2.3 Language Development: Cloze tests
2.4 Technical Writing: Technical Reports

UNIT-III

3.1 Vocabulary Development: Abbreviations& Acronyms
3.2 Grammar for Academic Writing: Describing(People/Things/Circumstances) : Adjectival & Adverbial groups
3.3 Language Development: Transcoding (Channel conversion from chart to text)
3.4 Technical Writing: Circular, Memos, Minutes of Meeting

UNIT-IV

4.1 Vocabulary Development: Corporate vocabulary
4.2 Grammar for Academic Writing: Inversions & Emphasis
4.3 Language Development: Reading Comprehension
4.4 Technical Writing: Resume Preparation

References :
- ❖ Communication Skills, Sanjay Kumar & Pushpa Latha. Oxford University Press: 2011.
- ❖ Technical Communication Principles and Practice. Oxford University Press: 2014.
- ❖ Advanced Language Practice, Michael Vince. MacMilan Publishers: 2003.
- ❖ Objective English (Third Edition), Edgar Thorpe & Showick. Pearson Education: 2009
- ❖ English Grammar: A University Course (Second Edition), Angela Downing & Philip Locke, Routledge Taylor & Francis Group: 2016

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DESIGN AND ANALYSIS OF ALGORITHMS

III B.Tech –V Semester (Code:18CS406)

Lecture:	4 Periods	Continuous Internal Assessment :	50 Marks
Final Exam :	3 hours	Semester End Exam :	50 Marks

UNIT-I   13 Periods

Introduction: Algorithm, Pseudo code for expressing algorithms, Performance Analysis -Space complexity, Time complexity, Asymptotic Notation- Big oh-notation, Omega notation, Theta notation and Little oh notation, Probabilistic analysis, Amortized analysis.
Master Theorem: Introduction, Generic Form- Case1, Case2, Case3, Inadmissible equations, Application to common algorithms.

UNIT-II   14 Periods

Divide and conquer: General method, applications - Quick sort, Merge sort, Strassen's matrix multiplication.
Greedy method: General method, applications-Job sequencing with deadlines, Fractional knapsack problem, Minimum cost spanning trees - Prims, Kruskal, Single source shortest path problem - Dijkstra.

UNIT-III   14 Periods

Dynamic Programming: General method, applications - 0/1 knapsack problem, Travelling salesperson problem, Longest common sequence algorithm, Multistage graphs using Forward & Backward approach, Reliability design.
Graph Applications: Graph traversals - Depth first, Breadth first, Bio Connected Components, Strongly Connected Components.

UNIT-IV   13 Periods

Backtracking: General method, applications-n-queen problem, sum of subsets problem.
Branch and Bound: General method, applications - 0/1 knapsack problem- LC Branch and Bound solution.
NP-Hard and NP-Complete problems: Basic concepts, non-deterministic algorithms, NP - Hard and NP Complete classes, Cook's theorem.

Text Book(s) :	1.	E. Horowitz, S. Sahni and S.Rajasekaran, "Fundamentals of Computer Algorithms", Galgotia Publication.
References :	1.	T. H. Cormen, Leiserson, Rivest and Stein, "Introduction of Computer Algorithm", PHI.
	2.	Sara Basse, A.V. Gelder, "Computer Algorithms", Addison Wesley.

PYTHON PROGRAMMING LAB

II B.Tech – IV Semester (Code: 18CSL41)

Lecture: **2** Periods, Practical: **3** Periods	Continuous Internal Assessment :	**50** Marks
Final Exam : **3** hours	Semester End Exam :	**50** Marks

UNIT-I

Introduction: Overview, History of Python, Python Features, Environment Setup. Variables, expressions, and statements: values and types, variables, names and keywords, statements, operators and operands, expressions, order of operations, modulus operator, string operations, asking the user for input, comments, choosing mnemonic variable names.

Conditional execution: Boolean expressions, logical operators, conditional execution, alternative execution, chained conditionals, nested conditionals, catching exceptions using try and except, short-circuit evaluation of logical expressions.

Functions: function calls, built-in functions, type conversion functions, random numbers, math functions, adding new functions, definitions and uses, flow of execution, parameters and arguments, fruitful functions and void functions.

Iteration: updating variables, the while statement, infinite loops and break, finishing iterations with continue, definite loops using for, loop patterns.

Strings: a string is a sequence, getting the length of a string using len, traversal through a string with a loop, string slices, strings are immutable, looping and counting, the in operator, string comparison, string methods, parsing strings, format operator.

Files I/O: persistence, opening files, text files and lines, reading files, searching through a file, letting the user choose the file name, using try except and open, writing files.

Lists: a list is a sequence, lists are mutable, traversing, operations, slices, methods, deleting elements, functions, strings, parsing lines, objects and values, aliasing, arguments.

Dictionaries: dictionary as a set of counters, dictionaries and files, looping and dictionaries, advanced text parsing.

Tuples: tuples are immutable, comparing tuples, tuple assignment, dictionaries and tuples, multiple assignment with dictionaries, the most common words, using tuples as keys in dictionaries, sequences.

Object-Oriented Programming: Managing Larger Programs, Using Objects, starting with Programs, Subdividing a Problem – Encapsulation, First Python Object, Classes as Types, Object Lifecycle, Many Instances, Inheritance.

Using Databases and SQL: Database concepts, Database Browser for SQLite, creating a database table, Structured Query Language summary, Basic data modeling, Programming with multiple tables, three kinds of keys, Using JOIN to retrieve data.

LIST OF EXPERIMENTS

1. Write a python program to check if the number is positive or negative or zero and display an appropriate message.

2. Write a python program to take a string from user and count number of vowels present and percentage of vowels in it.

3. Write a python program to find the most frequent words in a text file.

4. Write a Python Program to Find the Sum of first n Natural Numbers.

5. Write a python program to find those number which are divisible by 7 and multiple of 5 between 1500 and 2700.

6. Write a Python Program to Solve Quadratic Equation.

7. Create a program that ask the user for a number and then prints out a list of all the divisors of that number.

8. Write a Python Program to Find HCF or GCD.

9. Write a Python Program to Find LCM.

10. Write a Python program to construct the following pattern, using a nested loop number.

    ```
    1
    22
    333
    4444
    55555
    666666
    ```

11. Write a Python Program to Sort Words in Alphabetic Order.

12. Write a Python function to create the HTML string with tags around the word(s).

13. Write a Python program to reverse words in a string.

14. Write a Python program to strip a set of characters from a string.

15. Write a python function to find the maximum and minimum of a list of numbers.

16. Write a Python Program to Find the Square Root.

17. Write a Python Program to Convert Decimal to Binary Using Recursion.

18. Write a python recursive function to a find the factorial of a given number.

19. Write a python program to find the longest word in each line of given file.

20. Write a Python program to combine each line from first file with the corresponding line in second file.

21. Write a Python program to read a random line from a file.

22. Write a Python program to create a list by concatenating a given list which range goes from 1 to n.

    Sample list : ['p', 'q'] n =5

    Sample Output : ['p1', 'q1', 'p2', 'q2', 'p3', 'q3', 'p4', 'q4', 'p5', 'q5']

23. Write a Python program to split a list every Nth element.

    Sample list: ['a', 'b', 'c', 'd', 'e', 'f', 'g', 'h', 'i', 'j', 'k', 'l', 'm', 'n']

    Expected Output: [['a', 'd', 'g', 'j', 'm'], ['b', 'e', 'h', 'k', 'n'], ['c', 'f', 'i', 'l']]

24. Write a Python program to compute the similarity between two lists.

    Sample data: ["red", "orange", "green", "blue", "white"], ["black", "yellow", "green", "blue"]

    Expected Output:

    Color1-Color2: ['white', 'orange', 'red']
    Color2-Color1: ['black', 'yellow']

25. Write a Python program to replace the last element in a list with another list.

    Sample data: [1, 3, 5, 7, 9, 10], [2, 4, 6, 8]
    Expected Output: [1, 3, 5, 7, 9, 2, 4, 6, 8]

26. Write a Python program to find the repeated items of a tuple.

27. Write a Python program to convert a list with duplicates to a tuple without duplicates.

28. Write a Python program to reverse the elements of a tuple.

29. Write a Python program to replace last value of tuples in a list.

    Sample list: [(10, 20, 40), (40, 50, 60), (70, 80, 90)]

    Expected Output: [(10, 20, 100), (40, 50, 100), (70, 80, 100)]

30. Write a python program to find the most frequent words in a text file.

31. Write a Python program to combine two dictionary adding values for common keys.

    d1 = {'a': 100, 'b': 200, 'c':300}

    d2 = {'a': 300, 'b': 200, 'd':400}

    Sample output: Counter({'a': 400, 'b': 400, 'd': 400, 'c': 300})

32. Write a Python program to print all unique values in a dictionary.

    Sample Data : [{"V":"S001"}, {"V": "S002"}, {"VI": "S001"}, {"VI": "S005"},

    {"VII":"S005"}, {"V":"S009"},{"VIII":"S007"}]

    Expected Output : Unique Values: {'S005', 'S002', 'S007', 'S001', 'S009'}

33. Write a Python program to create and display all combinations of letters, selecting each letter from a different key in a dictionary.

    Sample data : {'1':['a','b'], '2':['c','d']}
    Expected Output:
    ac
    ad
    bc
    bd

34. Write a Python program to get the top three items in a shop.

    Sample data: {'item1': 45.50, 'item2':35, 'item3': 41.30, 'item4':55, 'item5': 24}
    Expected Output:
    item4 55
    item1 45.5
    item3 41.3

35. Write a Python program to match key values in two dictionaries.

    Sample dictionary: {'key1': 1, 'key2': 3, 'key3': 2}, {'key1': 1, 'key2': 2}
    Expected output: key1: 1 is present in both x and y

36. Write a Python class named Rectangle constructed by a length and width and a method which will compute the area of a rectangle.

37. Write a Python class named Circle constructed by a radius and two methods which will compute the area and the perimeter of a circle.

38. Write a Python program to create a class of Single Linked List.

39. Write a Python program to create a class of FIFO queue.

40. Predict the output of following Python programs and write the justification.

```python
class X(object):

    def __init__(self,a):
        self.num = a
    def doubleup(self):
        self.num *= 2

class Y(X):
    def __init__(self,a):
        X.__init__(self, a)
    def tripleup(self):
        self.num *= 3

obj = Y(4)
print(obj.num)

obj.doubleup()
print(obj.num)

obj.tripleup()
print(obj.num)
```

41. Predict the output of following Python programs and write the justification.

```python
# Base or Super class
class Person(object):
    def __init__(self, name):
        self.name = name

    def getName(self):
        return self.name

    def isEmployee(self):
        return False

# Inherited or Subclass (Note Person in bracket)
class Employee(Person):
    def __init__(self, name, eid):

        ''' In Python 3.0+, "super().__init__(name)" also works'''
        super(Employee, self).__init__(name)
        self.empID = eid

    def isEmployee(self):
        return True

    def getID(self):
```

```
        return self.empID

# Driver code
emp = Employee("Geek1", "E101")

print(emp.getName(), emp.isEmployee(), emp.getID())
```

42. Create a employees database with the following attributes and insert rows. employee_id, first_name, last_name, email, phone_number, hire_date, job_id, salary, commission_pct, manager_id, department_id

43. Write a query to get the highest, lowest, sum, and average salary of all employees.

44. Write a query to get the average salary for all departments employing more than 10 employees.

45. Write a query to find the names (first_name, last_name), the salary of the employees whose salary is greater than the average salary.

46. Write a query to get nth max salaries of employees.

| Text Book(s) : | 1. A Python Book: Beginning Python, Advanced Python, and Python Exercises, Dave Kuhlman, Open Source MIT License. |
| | 2. Python for Data Analysis, Wes McKinney, O' Reilly. |

| References : | 1. Python Data Science Handbook - Essential Tools for Working with |
| | 2. Data Science from Scratch, Joel Grus, O'Reilly. |

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WEB TECHNOLOGIES LAB
II B.Tech – IV Semester (Code: 18CSL42)

Practicals :	**3** Periods / Week	Continuous Internal Assessment :	**50** Marks
Final Exam :	**3** hours	Semester End Exam :	**50** Marks

LIST OF EXPERIMENTS

1. Write HTML5 document to design a webpage. (Using all fundamental elements, Organizing text, Links, URLs and Tables).

2. Write HTML5 document to design a webpage. (Using Images, Colors, Canvas & Forms).

3. Write codes for different types of styles in CSS3.

4. Write java scripts covering Function, Arrays and Events.

5. Demonstrate JavaScript objects.

6. Demonstrate browser objects.

7. Demonstrate Document Object Model for an HTML document.

8. Write well-formed and valid XML documents.

9. Write code for converting XML document to HTML using XSLT.

10. Build a webpage using JQuery and its components.

Text Book(s) :	1. Kogent Learning Solutions Inc.,HTML5 Black Book: Covers CSS3, Javascript, XML, XHTML, Ajax, PHP and Jquery.
References :	1. Harvey M. Deitel and Paul J. Deitel,"Internet & World Wide Web How to Program", 4/e,Pearson Education.
	2. Jason Cranford Teague, "Visual Quick Start Guide CSS, DHTML &AJAX", 4e, Pearson Education.
	3. Tom NerinoDoli smith, "JavaScript & AJAX for the web", Pearson Education 2007.
	4. Joshua Elchorn, "Understanding AJAX", Prentice Hall 2006.

RDBMS LAB
II B.Tech – IV Semester (Code: 18CSL43)

Practicals :	**3** Periods / Week	Continuous Internal Assessment :	**50** Marks
Final Exam :	**3** hours	Semester End Exam :	**50** Marks

LIST OF EXPERIMENTS

Experiment 1: Working with ER Diagram and Normalization

Example: ER Diagram for Sailors Database

Entities:

1. Sailor

2. Boat
Relationship:
Reserves
Primary Key
Atributes:

1. SID (Sailor Entity)

2. BID (Boat Entity)

Experiment 2: Working with DDL, DML, DCL and Key Constraints

Creation, Altering and Dropping of Tables and Inserting Rows into a Table (Use Constraints While Creating Tables) Examples Using Select Command.

Experiment 3: Working with Queries and Nested QUERIES

Queries (along with sub Queries) using ANY, ALL, IN, EXISTS, NOTEXISTS, UNION, INTERSET, Constraints

Expriment 4: Working with Queries USING Aggregate Operators & views

Queries using Aggregate Functions (COUNT, SUM, AVG, MAX and MIN), GROUP BY, HAVING and Creation and Dropping of Views

Experiment 5: Working with Conversion Functions & String Functions

Queries using Conversion Functions (TO_CHAR, TO_NUMBER AND TO_DATE), String Functions (CONCATENATION, LPAD, RPAD, LTRIM, RTRIM, LOWER, UPPER, INITCAP, LENGTH, SUBSTR AND INSTR), Date Functions (SYSDATE, NEXT_DAY, ADD_MONTHS, LAST_DAY, MONTHS_BETWEEN), LEAST, GREATEST, TRUNC, ROUND, TO_CHAR, TO_DATE

Experiment 6: Working with Triggers using PL/SQL

Develop Programs using BEFORE and AFTER Triggers, Row and Statement Triggers and INSTEAD OF Triggers

Experiment 7: Working with PL/SQL Procedures

Programs Development using Creation of Procedures, Passing Parameters IN and OUT of PROCEDURES

Experiment 8: Working with LOOPS using PL/SQL and Exception Handling

Program Development using WHILE LOOPS, Numeric FOR LOOPS, Nested Loops using ERROR Handling, BUILT-IN Exceptions, USE Defined Exceptions, RAISE- APPLICATION ERROR

Experiment 9: Working with Functions Using PL/SQL

Program Development using Creation of Stored Functions, Invoke Functions in SQL Statements and Write Complex Functions.

Experiment 10: Working CURSORS

Develop Programs using Features Parameters in a CURSOR, FOR UPDATE CURSOR, WHERE CURRENT of Clause and CURSOR Variables

Experiment11: Installation of SQL

Text Book(s) :	
	1. Oracle PL/SQL by Example, Benjamin Rosenzweig, Elena Silvestrova, Pearson Education 3rd Ed
	2. Oracle Database Logic PL/SQL Programming, Scott Urman, Tata Mc-Graw Hill.
	3. SQL and PL/SQL for Oracle 10g, Black Book, Dr .P.S. Deshpande

BAPATLA ENGINEERING COLLEGE:: BAPATLA
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Quotations for the Students

- Concerned about Environment: If you plan for 1 year -*Plant rice*; If you plan for 10 years - *Plant trees*; If you plan for 100 year - *Educate people*

- All great leaders are great readers

- Knowledge is a treasure but practice is the key to it

- Be a light, not a judge. Be a model not a critic. Be part of the solution, not part of the problem

- Self-trust is the first secret of success

- Success is a journey not a destination

- There are no shortcuts for success. The only route is hard work

- There is nothing impossible because the word says itself I am possible

- Reading is to the mind what exercise is to the body

- Obstacles are great incentives

- Imagination is more important than knowledge

- An ounce of knowledge is more precious than tons of gold

- The one who wants to climb the ladder, must begin at the bottom

- Happiness is a habit - cultivate it

- Ability will get you success, Character will keep you successful

ADMINISTRATIVE & LIBRARY BLOCK

RESEARCH PARK

CIVIL & MECHANICAL BLOCK

LADIES HOSTEL

GENERAL ENGINEERING BLOCK

GUEST HOUSE

Bapatla Engineering College (Autonomous)

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