

**ACADEMIC REGULATIONS (R – 14)**

**COURSE STRUCTURE**

**AND**

**DETAILED SYLLABI**

**FOR**

**B. Tech Regular Four Year Degree Courses**

(For the Batches Admitted From 2014-2015)

**&**

**B. Tech (Lateral Entry Scheme)**

(For the Batches Admitted From 2015-2016)

**INFORMATION TECHNOLOGY**



**SRI VENKATESWARA COLLEGE OF ENGINEERING & TECHNOLOGY**

**(AUTONOMOUS)**

**(Affiliated to JNTUA, Ananthapuramu, Approved by AICTE, New Delhi, Accredited by NAAC, Bengaluru)**

**R.V.S. NAGAR, CHITTOOR- 517 127 (AP)**

**SRI VENKATESWARA COLLEGE OF ENGINEERING AND TECHNOLOGY  
(Autonomous)**

**(Affiliated to J.N.T. University Anantapur, Ananthapuramu).**

**ACADEMIC REGULATIONS**

**B.Tech. Regular Four Year Degree Program**

**(For the batches admitted from the academic year 2014-15) and**

**B.Tech. (Lateral Entry Scheme)**

**(For the batches admitted from the academic year 2015-16)**

- 1. Applicability** : All the rules specified herein, approved by the Academic Council, will be in force and applicable to students admitted from the academic year 2014-2015 onwards. Any reference to "College" in these rules and regulations stands for Sri Venkateswara College of Engineering and Technology (Autonomous).
- 2. Extent** : All the rules and regulations, specified herein after shall be read as a whole for the purpose of interpretation and as and when a doubt arises, the interpretation of the Chairman, Academic Council is final. As per the requirements of statutory bodies, Principal, Sri Venkateswara College of Engineering and Technology (A) shall be the Chairman of the Academic Council.
- 3. Admission** :
  - 3.1 Admission in to first year of Four Year B.Tech., Degree Program of study in Engineering :**
    - 3.1.1 Eligibility** : A candidate seeking admission into the first year of four year B.Tech., Degree Program should have Passed either Intermediate Public Examination conducted by the Board of Intermediate Education, Government of Andhra Pradesh with Mathematics, Physics and Chemistry as optional subjects (or any equivalent examination recognized by the Board of Intermediate Education and JNTU Anantapur) or Diploma in Engineering in the relevant branch conducted by the Board of Technical Education, Andhra Pradesh (or equivalent Diploma recognized by State Board of Technical Education, Government of Andhra Pradesh and JNTU Anantapur) for admission.

**3.1.2 Admission Procedure** : As per the existing stipulations of A.P State Council of Higher Education (APSCHE), Government of Andhra Pradesh, admissions are made into the first year of four year B.Tech., Degree Program as follows:

Seats under various categories are filled as per the norms prescribed by the Government of Andhra Pradesh.

### **3.2 Admission into the second year of four Year B.Tech., Degree Program in Engineering:**

**3.2.1 Eligibility** : Candidates qualified in ECET (FDH) and / or admitted by the Convener, ECET (FDH).

In all such cases for admission, when needed, Permissions from the statutory bodies are to be obtained.

**3.2.2 Admission Procedure** : Lateral Entry seats are filled as per the norms prescribed by the Government of Andhra Pradesh from time to time.

### **4. Programs of study offered leading to the award of B.Tech degree**

1. *B.Tech (Civil Engineering)*
2. *B.Tech (Electrical & Electronics Engineering)*
3. *B.Tech (Mechanical Engineering)*
4. *B.Tech (Electronics & Communication Engineering)*
5. *B.Tech (Computer Science & Engineering)*
6. *B.Tech (Information Technology)*
7. *B.Tech (Automobile Engineering)*

**5. Academic Year** : The College shall follow semester pattern from first year onwards. I, II semesters of First Year of four Year B.Tech., Program shall have a minimum of 14 instructional weeks. From second year onwards each semester shall have a minimum of 16 instructional weeks.

**6. Course Structure** : Each Program of study shall consist of:

- **General subjects comprise of the following courses: (5 to 10%)**
  - i. English Language /Communication Skills / Mind Skills
  - ii. Humanities and Social Sciences
  - iii. Principles of Management

The above courses are common to all Branches.

- **Basic science subjects comprise of the following courses: (15 to 25%)**

- i. Mathematics
- ii. Physics
- iii. Chemistry

The above courses are common to all branches.

- **Basic Engineering subjects comprise some of the following courses, depending upon the branch: (15 to 25%)**

- i. Engineering Drawing
- ii. Engineering workshop
- iii. Engineering Mechanics
- iv. Basic Mechanical Engineering
- v. Basic Electrical & Electronics Engineering
- vi. Computer Programming

- **Core Subjects: (45 to 55%)**

The list of professional subjects is chosen as per the suggestions of the experts to impart broad based knowledge needed in the concerned branch of study.

- **Elective subjects: (10 to 15%)**

Electives will be offered to the students to diversify the spectrum of knowledge.

These electives can also be chosen based on the interest of the student to broaden his individual skill and knowledge in the specialized area.

**Main Project:** Main Project shall be carried out in the institution / industry during IV year II semester for a period of one semester. The project report shall be submitted to the department after successful completion.

**7. Credit System** : Credits are assigned based on the following norms.

Subject	Semester Pattern	
	Hours / Week	Credits
Theory	01	01
Practical	03	02
Drawing Practice	02	01
Project Work	--	<b>16</b>

- i. As a norm, for the theory subjects, **one credit** for one contact period per week is assigned.
  - ii. As a norm, for practical courses **two credits** will be assigned for three contact periods per week.
  - iii. Tutorials do not carry any credits. However, each of the analytical and problem oriented courses will have one tutorial period per week.
  - iv. For Project work where formal contact hours are not specified, credits are assigned based on the complexity of the work to be carried out.
- The four year curriculum of any B.Tech, Program of study shall have a total of **176** credits.
  - In the case of lateral entry students, B.Tech. program of study shall have a total of **132** credits.
  - The exact requirements of credits for each subject will be as recommended by the concerned Board of Studies and approved by the Academic Council.

**8. Examination System** : All components in any Program of study will be Evaluated continuously through internal evaluation and an external evaluation component conducted as semester-end examination.

**Distribution of Marks:**

S. No	Examination	Marks %	Examination and Evaluation	Scheme of examination
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1	Theory	70	Semester-end examination (external Paper setting and external evaluation)		This Examination question paper in theory subjects will be for a maximum of 70 marks. The question paper shall consists of two parts <b>Part A:</b> 5 short answer questions shall be given for a maximum 20 marks with one question from each unit. No choice will be given and all questions carry equal marks. <b>Part B:</b> 5 Descriptive/ problematic questions shall be given for a maximum of 50 marks with one question from each unit with internal choice i.e either or type. All questions carry equal marks.
		30	20	Mid- Examination of 120 Min. duration (Internal evaluation). The question paper shall be of descriptive type with 5 questions out of which 4 are to be answered and evaluated for 20 marks.	Two (02) mid-term exams, each for 20 marks are to be conducted. Better of the two shall be considered for awarding internal marks. <b>Mid-I:</b> After first spell of instructions(First 2 Units) <b>Mid-II:</b> After second spell of instructions (Last 3 Units.)
		10	Assignment (Internal evaluation)	Two assignments shall be given and each will be evaluated for 10 marks. Average of two Assignments shall be taken as internal marks for the	

					<p>assignments.</p> <p><b>Assignment-I:</b> After first spell of instructions(First 2 Units)</p> <p><b>Assignment-II:</b> After second spell of instructions (Last 3 Units.)</p>
2	Laboratory	70	Semester-end Lab Examination (External evaluation)		70 marks are allotted for laboratory examination during semester-end.
		30	20	Continuous evaluation	Performance in laboratory experiments and Record are considered.
			10	Internal test	Practical Test at the end of the semester.
					➤ Marks scored in the continuous evaluation and internal test are considered for awarding internal marks.
3	Drawing	70	Semester-end drawing Examination (External evaluation)		70 marks are allotted for drawing examination during semester-end.
		30	20	Continuous evaluation	Performance in Drawing classes will be considered.
			10	Internal test	Two tests will be conducted. Better of the two will be taken.
					➤ Marks scored in the continuous evaluation and internal test are considered for awarding internal marks.
4	Project Work	300	200	External evaluation	Semester-end Project Viva-Voce Examination by a Committee as detailed under 8.2.
			100	Internal evaluation	Continuous evaluation by the Departmental Committee

Wherever the Question paper is different from the conventional pattern, the concerned pattern of question paper will be given at the end of the syllabus of that subject.

**8.2 Project Work Evaluation** : The Semester-End Examination (Viva-voce) shall be conducted by a Committee consisting of External examiner (nominated by the Chief Controller of Examinations), HOD, & Supervisor. The evaluation of project work shall be conducted at the end of the IV year second semester. The Internal Evaluation shall be made by the Departmental Committee, on the basis of two project reviews of each student.

**8.3 Eligibility to appear for the Semester-End examination:**

- 8.3.1** A student shall be eligible to appear for Semester –End examinations if he acquires a minimum of 75% of attendance in aggregate of all the subjects in a semester.
- 8.3.2** Condonation of shortage of attendance in aggregate up to 10% (65% and above and below 75%) in each semester may be granted on medical grounds by the College Academic Committee. A stipulated fee shall be payable towards condonation of shortage of attendance to the College.
- 8.3.3** Shortage of Attendance below 65% in aggregate shall in no case be condoned and the candidate will be detained.
- 8.3.4** Detained students are not eligible to take their end examination of that class and their registration shall stand cancelled.
- 8.3.5** A student detained due to shortage of attendance, will have to repeat that semester when offered next.

**8.4 Evaluation: Following procedure governs the evaluation.**

- 8.4.1** The marks for the internal evaluation components will be added to the external evaluation marks secured in the Semester –End examinations, to arrive at total marks for any subject in that semester.
- 8.4.2** Performance in all the subjects is tabulated program-wise and will be scrutinized by the Results Committee and subject-wise marks lists are finalized. Total marks obtained in each subject are converted into letter grades.  
Results Committee comprises of Principal, Controller of Examinations, one Senior Professor nominated by the Principal and the University Nominee.
- 8.4.3** Student-wise tabulation is done and student-wise Grade Sheet is generated and issued to the students.



### **8.5 Revaluation / Recounting:**

Students shall be permitted for request for recounting/revaluation of the Semester-End examination answer scripts within a stipulated period after payment of prescribed fee.

After recounting or revaluation, records are updated with changes if any and the student will be issued a revised grade sheet. If there are no changes, the same will be intimated to the students.

### **8.6 Supplementary Examination:**

**8.6.1** In addition to the regular Semester- End examinations conducted, the College may also schedule and conduct supplementary examinations for all the subjects of other semesters when feasible for the benefit of students. Such of the candidates writing supplementary examinations may have to write more than one examination per day.

## **9. Academic Requirements for Promotion/ completion of regular B.Tech Program of study:**

The following academic requirements have to be satisfied in addition to the attendance requirements for promotion/completion of regular B.Tech Program of study.

### **9.1 For students admitted in B.Tech (Regular) Program:**

- i. A student shall be deemed to have satisfied the minimum academic requirements for each theory, practical, design drawing subject or project, if he secures not less than 35% of marks in the Semester End examination and a minimum of 40% of marks in the sum total of the internal evaluation and Semester-End examination taken together.
- ii. A student shall be promoted from second year to third year only if he fulfills the academic requirement of securing 44 credits from:
  - a) Two regular and two supplementary examinations of I-year I semester.
  - b) Two regular and one supplementary examinations of I-year II semester.
  - c) One regular and one supplementary examination of second year I semester.
  - d) One regular examination of II- year II Semester.

Irrespective of whether the candidates appear for Semester-End examination or not as per the normal course of study.

- iii. A student shall be promoted from third year to fourth year Program of study only if he fulfills the academic requirements of securing 66 credits from:
  - a) Three regular and three supplementary examinations of I-year I semester.
  - b) Three regular and two supplementary examinations of I-year II Semester
  - c) Two regular and two supplementary examination of second year I semester.
  - d) Two regular and one supplementary examinations second year II semester.
  - e) One regular and one supplementary examination of third year I semester.
  - f) One Regular Examination of Third year II semester.Irrespective of whether the candidate appears for the Semester-End examination or not as per the normal course of study and in case of getting detained for want of credits by sections 9.1(ii) and 9.1 (iii) above, the student may make up the credits through supplementary examinations before the date of commencement of class work for III year I semester or IV year I semester as the case may be.
  
- iv. A student shall register for all the 176 credits and earn all the 176 credits. Marks obtained in all the 176 credits shall be considered for the award of the class based on CGPA.
  
- v. A student who fails to earn 176 credits as indicated in the course structure within eight academic years from the year of his admission shall forfeit his seat in B. Tech., Program and his admission stands cancelled.

**9.2 For Lateral Entry Students (batches admitted from 2015-2016):**

- i. A student shall be deemed to have satisfied the minimum academic requirements for each theory, practical, design, drawing subject or project if he secures not less than 35% of marks in the Semester-End examination and a minimum of 40% of marks in the sum total of the internal evaluation and Semester-End examination taken together.

- ii. A student shall be promoted from third year to fourth year only if he fulfills the academic requirements of securing 44 credits from the following examinations.
  - a) Two regular and two supplementary examinations of II year I semester.
  - b) Two regular and one supplementary examination of II year II semester.
  - c) One regular and one supplementary examination of III year I semester.
  - d) One Regular Examination of Third year II semester.

Irrespective of whether the candidate appear the Semester-End examination or not as per the normal Course of study and in case of getting detained for want of credits the student may make up the credits through supplementary exams of the above exams before the date of commencement of class work for IV year I semester.

- i. A student shall register for all 132 credits and earn all the 132 credits. Marks obtained in all 132 credits shall be considered for the award of the class based on CGPA.
- ii. A student who fails to earn 132 credits as indicated in the Course structure within six academic years from the year of his admission shall forfeit his seat in B.Tech., Program and his admission stands cancelled.

**9.3 Audit Courses:** Any student who wishes to pursue audit course can register for the same with the concerned teacher and attend to the classes regularly. No examination will be conducted, no grade will be given for the audit courses. However such of those students who have registered and got the requisite attendance of 75% in the audit course, it will be mentioned in their grade sheet.

**10. Transitory Regulations:**

Students who got detained for want of attendance (or) who have not fulfilled academic requirements (or) who have failed after having undergone the course in earlier regulations (or) have discontinued and wish to continue the course are eligible for admission into the unfinished semester from the date of commencement of class work with the same (or) equivalent subjects as and when subjects are offered and they continue to be in the academic regulations of the batch they join later.

A regular student has to satisfy all the eligibility requirements within the maximum stipulated period of eight years, and a lateral entry student within six years, for the award of B.Tech Degree.

**11. Grades, Grade Point Average and Cumulative Grade Point Average**

**11.1 Grade System:** After all the components and sub-components of any subject (including laboratory subjects) are evaluated, the final total marks obtained will be converted to letter grades on a “10 point scale” described below.

% of marks obtained	Grade	Grade Points(GP)
90 to 100	A+	10
80 to 89	A	9
70 to 79	B	8
60 to 69	C	7
50 to 59	D	6
40 to 49	E	5
Less than 40 in sum of Internal & External (or) Less than 35 in External	F	0
Not Appeared	N	0

- **Pass Marks:** A student is declared to have passed theory and/ or laboratory subject, if he secures minimum of 35% marks in external examination, and a minimum of 40% marks in the sum total of internal evaluation and external examination taken together. Otherwise he will be awarded fail grade – F in such subject irrespective of internal marks.
- F is considered as a fail grade indicating that the student has to pass the semester-end examination in that subject in future and obtain a grade other than F and N for clearing this subject.

**11.2 Grade Point Average (GPA):**

Grade Point Average (GPA) will be calculated as given below on a “10 Point scale” as an Index of the student’s performance at the end of each semester:

$$GPA = \frac{\sum(CXGP)}{\sum C}$$

Where C denotes the credits assigned to the subjects undertaken in that semester and GP denotes the grade points earned by the student in the respective subjects.

**11.3 Cumulative Grade Point Average (CGPA):**

At the end of every semester, a Cumulative Grade Point Average (CGPA) on a 10 Point scale is computed considering all the subjects passed up to that point as an index of overall Performance up to that Point as given below:

$$CGPA = \frac{\sum(CXGP)}{\sum C}$$

Where C denotes the credits assigned to subjects undertaken upto the end of the current year/semester and GP denotes the grade points earned by the student in the respective courses.

**11.4 Grade Sheet:** A grade sheet (Marks Memorandum) will be issued to each student indicating his performance in all subjects registered in that semester indicating the GPA and CGPA. GPA and CGPA will be rounded off to the second place of decimal.

**12. Consolidated Grade Sheet:** After successful completion of the entire Program of study, a Consolidated Grade Sheet containing performance of all academic years will be issued as a final record. Transcripts will also be issued, if required, after payment of requisite fee.

**13. Award of Degree :** The Degree will be conferred and awarded by Jawaharlal Nehru Technological University Anantapur, Ananthapuramu on the recommendation of the Principal of SVCET (Autonomous), Chittoor.

**13.1 Eligibility :** A student shall be eligible for the award of B.Tech., Degree if he fulfills all the following conditions:

- Registered and successfully completed all the components prescribed in the program of study for which he is admitted.
- Successfully acquired the minimum required credits as specified in the curriculum corresponding to the branch of study within the stipulated time.
- Obtained CGPA greater than or equal to 5.0 (Minimum requirement for declaring as passed.)

**13.2 Award of Class :** Declaration of Class is based on CGPA.

Cumulative Grade Point Average	Class
≥7.0	First Class with Distinction
≥6.0 and <7.0	First Class
>5.0 and <6.0	Second Class
5.0	Pass Class

**14. With – Holding of Results:** If the candidate has not paid dues to the university/college or if any case of in-discipline is pending against him, the result of the candidate shall be withheld and he will not be allowed / promoted into the next higher semester. The issue of degree is liable to be withheld in such cases.

**15. Additional academic regulations:**

- i. A regular student has to complete all the eligibility requirements within the maximum stipulated period of eight years, and a lateral entry student within six years.
- ii. A student can appear for any number of supplementary examinations till he clears all subjects within the stipulated period.
- iii. A grade sheet (marks memorandum) will be issued to the student indicating his performance in all the courses of that semester along with the GPA and CGPA.
- iv. Any canvassing / impressing the administration, examiners, faculty or staff in any form, the candidate is liable for punishment as per the mal practice rules appended here with.
- v. When a student is absent for any examination (internal or external) he is treated as to have appeared and obtained zero marks in that component (course) and grading is done accordingly.
- vi. When a component is cancelled as a penalty, he is awarded zero marks in that component.

**16. Amendments to regulations:**

The Academic Council of Sri Venkateswara College of Engineering and Technology (Autonomous) reserves the right to revise, amend, or change the Regulations, Scheme of Examinations, and / or Syllabi or any other Policy relevant to the needs of the society or industrial requirements etc., without prior notice.

**17. General:**

Where the words "he", "him", "his", "himself" occur in the regulations, they include "she", "her", "herself".

**Note: Failure to read and understand the regulations is not an excuse.**

RULES FOR DISCIPLINARY ACTION FOR MALPRACTICE / IMPROPER CONDUCT IN EXAMINATIONS

	<b>Nature of Malpractices / Improper conduct</b>	<b>Punishment</b>
	<b>If the candidate</b>	
1. (a)	Possesses or keeps accessible in examination hall, any paper, note book, programmable calculators, Cell phones, pager, palm computers or any other form of material concerned with or related to the subject of the examination (theory or practical) in which he is appearing but has not made use of (material shall include any marks on the body of the candidate which can be used as an aid in the subject of the examination)	Expulsion from the examination hall and cancellation of the performance in that subject only.
(b)	Gives assistance or guidance or receives it from any other candidate orally or by any other body language methods or communicates through cell phones with any candidate or persons in or outside the exam hall in respect of any matter.	Expulsion from the examination hall and cancellation of the performance in that subject only of all the candidates involved. In case of an outsider, he will be handed over to the police and a case is registered against him.
2.	Has copied in the examination hall from any paper, book, programmable calculators, palm computers or any other form of material relevant to the subject of the examination (theory or practical) in which the candidate is appearing.	Expulsion from the examination hall and cancellation of the performance in that subject and all other subjects the candidate has already appeared including practical examinations and project work and shall not be permitted to appear for the remaining examinations of the subjects of that Semester/year. The Hall Ticket of the candidate is to be cancelled.
3.	Comes in a drunken condition to the	Expulsion from the examination hall

	examination hall.	and cancellation of the performance in that subject and all other subjects the candidate has already appeared including practical examinations and project work and shall not be permitted to appear for the remaining examinations of the subjects of that Semester/year.
4.	Smuggles in the Answer book or additional sheet or takes out or arranges to send out the question paper during the examination or answer book or additional sheet, during or after the examination.	Expulsion from the examination hall and cancellation of the performance in that subject and all other subjects the candidate has already appeared including practical examinations and project work and shall not be permitted for the remaining examinations of the subjects of that Semester/year. The candidate is also debarred for two consecutive semesters from class work and all University examinations. The continuation of the course by the candidate is subject to the academic regulations in connection with forfeiture of seat.
5.	Leaves the exam hall taking away answer script or intentionally tears of the script or any part thereof inside or outside the examination hall.	Expulsion from the examination hall and cancellation of the performance in that subject and all other subjects the candidate has already appeared including practical examinations and project work and shall not be permitted for the remaining examinations of the subjects of that Semester/year. The candidate is also debarred for two consecutive semesters from class work and all University examinations. The continuation of the course by the



		candidate is subject to the academic regulations in connection with forfeiture of seat.
6.	Possess any lethal weapon or firearm in the examination hall.	Expulsion from the examination hall and cancellation of the performance in that subject and all other subjects the candidate has already appeared including practical examinations and project work and shall not be permitted for the remaining examinations of the subjects of that Semester/year. The candidate is also debarred and forfeits of seat.
7.	Impersonates any other candidate in connection with the examination.	The candidate who has impersonated shall be expelled from examination hall. The candidate is also debarred and forfeits the seat. The performance of the original candidate who has been impersonated, shall be cancelled in all the subjects of the examination (including practicals and project work) already appeared and shall not be allowed to appear for examinations of the remaining subjects of that semester/year. The candidate is also debarred for two consecutive semesters from class work and all University examinations. The continuation of the course by the candidate is subject to the academic regulations in connection with forfeiture of seat. If the impostor is an outsider, he will be handed over to the police and a case is registered against him.

8.	<p>Refuses to obey the orders of the Chief Superintendent / Assistant – Superintendent / any officer on duty or misbehaves or creates disturbance of any kind in and around the examination hall or organizes a walk out or instigates others to walk out, or threatens the officer-in-charge or any person on duty in or outside the examination hall of any injury to his person or to any of his relations whether by words, either spoken or written or by signs or by visible representation, assaults the officer-in-charge, or any person on duty in or outside the examination hall or any of his relations, or indulges in any other act of misconduct or mischief which result in damage to or destruction of property in the examination hall or any part of the College campus or engages in any other act which in the opinion of the officer on duty amounts to use of unfair means or misconduct or has the tendency to disrupt the orderly conduct of the examination.</p>	<p>In case of students of the college, they shall be expelled from examination halls and cancellation of their performance in that subject and all other subjects the candidate(s) has (have) already appeared and shall not be permitted to appear for the remaining examinations of the subjects of that semester/year. The candidates also are debarred and forfeit their seats. In case of outsiders, they will be handed over to the police and a police case is registered against them.</p>
9.	<p>If student of the college, who is not a candidate for the particular examination or any person not connected with the college indulges in any malpractice or improper conduct mentioned in clause 6 to 8.</p>	<p>Student of the colleges expulsion from the examination hall and cancellation of the performance in that subject and all other subjects the candidate has already appeared including practical examinations and project work and shall not be permitted for the remaining examinations of the subjects of that semester/year. The candidate is also debarred and forfeits the seat.</p> <p>Person(s) who do not belong to the College will be handed over to police and, a police case will be registered against them.</p>

10.	Uses objectionable, abusive or offensive language in the answer paper or in letters to the examiners or writes to the examiner requesting him to award pass marks.	Cancellation of the performance in that subject.
11.	Copying detected on the basis of internal evidence, such as, during valuation or during special scrutiny.	Cancellation of the performance in that subject and all other subjects the candidate has appeared including practical examinations and project work of that semester/year examinations.
12.	If any malpractice is detected which is not covered in the above clauses 1 to 11 shall be reported to the Examination committee for further action to award suitable punishment.	

Malpractices identified by squad or special invigilators

1. *Punishments to the candidates as per the above guidelines.*



**SRI VENKATESWARA COLLEGE OF ENGINEERING AND TECHNOLOGY(AUTONOMOUS)  
R.V.S. NAGAR,CHITTOOR-517127 (ANDHRA PRADESH)  
DEPARTMENT OF INFORMATION TECHNOLOGY**

**REVISED SCHEME OF INSTRUCTION AND EXAMINATIONS UNDER R14 REGULATIONS  
Effective from 2014-15**

**I B. Tech I Semester**

S. No	Course Code	Subject	Hours/Week			Credits C	Maximum Marks		
			L	T	P		Internal	External	Total
1	14AHS02	Engineering Mathematics-I	3	1	-	3	30	70	100
2	14AHS04	Engineering Physics	3	1	-	3	30	70	100
3	14AHS05	Environmental Science	3	1	-	3	30	70	100
4	14AEE03	Basic Electrical Engineering	3	1	-	3	30	70	100
5	14ACS01	Problem Solving and Computer Programming	3	2	-	4	30	70	100
6	14AHS09	Engineering Physics Lab	-	-	3	2	30	70	100
7	14AME03	Engineering Workshop	-	-	3	2	30	70	100
8	14ACS03	Computer Programming Lab	-	-	3	2	30	70	100
<b>Total</b>			<b>15</b>	<b>6</b>	<b>9</b>	<b>22</b>	<b>240</b>	<b>560</b>	<b>800</b>

**I B.Tech II Semester**

S. No	Course Code	Subject	Hours/Week			Credits C	Maximum Marks		
			L	T	P/D		Internal	External	Total
1	14AHS01	Technical English –I	3	-	-	3	30	70	100
2	14AHS06	Engineering Mathematics-II	3	1	-	3	30	70	100
3	14AHS03	Engineering Chemistry	3	1	-	3	30	70	100
4	14AME01	Engineering Drawing	2	-	4	4	30	70	100
5	14ACS05	Data Structures	3	1	-	3	30	70	100
6	14AHS07	Technical English Lab – I	-	-	3	2	30	70	100
7	14AHS08	Engineering Chemistry Lab	-	-	3	2	30	70	100
8	14ACS06	Data Structures Lab	-	-	3	2	30	70	100
<b>Total</b>			<b>14</b>	<b>3</b>	<b>13</b>	<b>22</b>	<b>240</b>	<b>560</b>	<b>800</b>

## II B.Tech – I Semester

S. No	Course Code	Subject	Hours/Week			Credits C	Maximum Marks		
			L	T	P		Internal	External	Total
1	14AHS12	Managerial Economics and Financial Analysis	3	1	-	3	30	70	100
2	14ACS07	Computer Organization	3	1	-	3	30	70	100
3	14ACS08	Advanced Data Structures	3	1	-	3	30	70	100
4	14AEC07	Digital Logic Design	3	1	-	3	30	70	100
5	14ACS09	Discrete Mathematics	3	1	-	3	30	70	100
6	14AEC01	Electronic Devices and Circuits	3	1	-	3	30	70	100
7	14AEC02	Electronic Devices and Circuits Lab	-	-	3	2	30	70	100
8	14ACS10	Advanced Data Structures Lab	-	-	3	2	30	70	100
<b>Total</b>			<b>18</b>	<b>6</b>	<b>6</b>	<b>22</b>	<b>240</b>	<b>560</b>	<b>800</b>

## II B.Tech – II Semester

S. No	Course Code	Subject	Hours/Week			Credits C	Maximum Marks		
			L	T	P		Internal	External	Total
1	14AHS10	Probability and Statistics	3	1	-	3	30	70	100
2	14ACS11	Operating Systems	3	1	-	3	30	70	100
3	14AIT01	Paradigms of Programming	3	1	-	3	30	70	100
4	14ACS13	Design and Analysis of Algorithms	3	1	-	3	30	70	100
5	14AIT02	Data Communication and Networking	3	1	-	3	30	70	100
6	14ACS15	Database Management Systems	3	1	-	3	30	70	100
7	14AIT03	Operating System Lab	-	-	3	2	30	70	100
8	14ACS17	Database Management Systems Lab	-	-	3	2	30	70	100
<b>Total</b>			<b>18</b>	<b>6</b>	<b>6</b>	<b>22</b>	<b>240</b>	<b>560</b>	<b>800</b>
9	14AHS15	Quantitative Aptitude and Reasoning – I (Audit Course)	3	-	-	-	-	-	-

### III B.Tech – I Semester

S. No	Course Code	Subject	Hours/Week			Credits	Maximum Marks		
			L	T	P	C	Internal	External	Total
1	14AIT04	Automata and Compiler Design	3	1	-	3	30	70	100
2	14ACS20	Computer Graphics	3	1	-	3	30	70	100
3	14AIT05	Real Time Computing and Communication	3	1	-	3	30	70	100
4	14AEC22	Microprocessors and Interfacing	3	1	-	3	30	70	100
5	14ACS21	Software Engineering	3	1	-	3	30	70	100
6	14ACS34	Artificial Intelligence & Expert Systems	3	1	-	3	30	70	100
7	14AEC25	Microprocessors & Interfacing Lab	-	-	4	2	30	70	100
8	14ACS23	Computer Graphics and Compiler Design Lab	-	-	4	2	30	70	100
9	14AIT06	Comprehensive Online Examination	-	-	-	1	-	100	100
<b>Total</b>			<b>18</b>	<b>6</b>	<b>8</b>	<b>23</b>	<b>240</b>	<b>660</b>	<b>900</b>
10	14AHS16	Quantitative Aptitude and Reasoning – II (Audit Course)	3	-	-	-	-	-	-

### III B.Tech – II Semester

S. No	Course Code	Subject	Hours/Week			Credits	Maximum Marks		
			L	T	P	C	Internal	External	Total
1	14AHS13	Technical English –II	3	1	-	3	30	70	100
2	14ACS25	Object Oriented Analysis and Design	3	1	-	3	30	70	100
3	14ACS26	Internet and Web Technologies	3	1	-	3	30	70	100
4	14ACS27	Data Warehousing and data Mining	3	1	-	3	30	70	100
5	14ACS19	Computer Networks	3	1	-	3	30	70	100
6	Choice Based Credit Course(Interdepartment)		3	1	-	3	30	70	100
	14AEC36	Digital Image processing							
	14AME57	Robotics							
	14AEC31	MEMS & MICROSYSTEMS							
7	14ACS32	Data Engineering & Web Technologies Lab	-	-	4	2	30	70	100
8	14AHS14	Technical English Lab – II	-	-	4	2	30	70	100

9	14AIT07	Comprehensive Online Examination	-	-	-	1	-	100	100
<b>Total</b>			<b>18</b>	<b>6</b>	<b>8</b>	<b>23</b>	<b>240</b>	<b>660</b>	<b>900</b>
10	14AMB01	Management Science (Audit Course)	3	-	-	-	-	-	-

#### IV B.Tech – I Semester

S. No	Course Code	Subject	Hours/Week			Credits	Maximum Marks		
			L	T	P		C	Internal	External
1	14AIT08	Information Security	3	1	-	3	30	70	100
2	14ACS35	Cloud Computing	3	1	-	3	30	70	100
3	14ACS36	Software Testing	3	1	-	3	30	70	100
4	14AEC34	Embedded Systems	3	1	-	3	30	70	100
<b>Choice Based Credit Courses(Department Specific)–I</b>									
5	14AIT09	Wireless & Mobile Computing	3	1	-	3	30	70	100
	14ACS39	Big Data Analytics							
	14ACS40	Software Project Management							
<b>Choice Based Credit Courses(Department Specific) –II</b>									
6	14ACS41	Web Services	3	1	-	3	30	70	100
	14ACS43	Internetworking with TCP/IP							
	14AIT10	Advanced computer Architecture							
7	14AEC45	Embedded Systems Lab	-	-	4	2	30	70	100
8	14ACS45	Cloud Computing and Software Testing Lab	-	-	4	2	30	70	100
<b>Total</b>			<b>18</b>	<b>6</b>	<b>8</b>	<b>22</b>	<b>240</b>	<b>560</b>	<b>800</b>
14AMB02		Professional Ethics (Audit Course)	3	-	-	-	-	-	-

### IV B.Tech – II Semester

S. No	Course Code	Subject	Hours/Week			Credits	Maximum Marks		
			L	T	P		C	Internal	External
<b>MOOC 1</b>									
1	14ACS46	Subject 1	-	-	-	3	30	70	100
	14ACS47	Subject 2							
	14ACS48	Subject 3							
	14ACS49	Subject 4							
<b>MOOC 2</b>									
2	14ACS50	Subject 5	-	-	-	3	30	70	100
	14ACS51	Subject 6							
	14ACS52	Subject 7							
	14ACS53	Subject 8							
3	14AIT11	Comprehensive Viva-Voce	-	-	-	2	-	100	100
4	14AIT12	Project work & Seminar	-	-	-	12	60	140	200
<b>Total</b>			-	-	-	<b>20</b>	<b>120</b>	<b>380</b>	<b>500</b>



**Sri Venkateswara College of Engineering and Technology (Autonomous)  
Chittoor**

**14AHS02 ENGINEERING MATHEMATICS – I  
(Common to all branches)**

**L T P C**

**3 1 - 3**

**I B.Tech - I Semester(IT)**

**Objectives:**

*The objectives of this course are to*

1. *model a wide range of engineering and practical problems as ordinary differential equations.*
2. *apply fundamental mathematical principles as well as computational techniques to the problems of engineering and scientific practice.*
3. *formulate the engineering problems in vectorial form.*

**Outcomes:**

After completion of the course the student will be able to

4. *comprehend the areas of application of differential equations.*
5. *apply the principles of differential equations, functions of variables separable, integration, Laplace transforms and vector calculus to the engineering and scientific problems.*
6. *obtain their solutions using various computational methods.*
- 7.

**UNIT-I**

**DIFFERENTIAL EQUATIONS:** Linear and Bernoulli's Equations – Non-homogenous Linear Differential equation of second and higher order with constant co-efficients. Newton's law of cooling-L-R-C circuits.

**UNIT-II**

**FUNCTIONS OF SEVERAL VARIABLES:** Maxima and Minima for functions of two variables – Lagrange's method of multipliers of 3 variables only.

**Curve Tracing:** Cartesian and polar curves.**Radius of Curvature:** Cartesian and polar curves.

**UNIT-III**

**APPLICATIONS OF INTEGRATION:** Length of an arc and area using line integral.

**Multiple Integrals:** Double and Triple integrals-Change of variables-Change of Order of integration(Cartesian and polar forms).Surface areaand Volume of solid of revolution.

**UNIT-IV**

**LAPLACE TRANSFORMS:** Laplace transforms of standard functions- First Shifting Theorem-Transforms of derivatives and integrals-Unit step Function – Second Shifting Theorem –Laplace transforms of Periodic functions – InverseLaplace transforms - Convolution theorem.

**UNIT-V**

**VECTOR CALCULUS:** Gradient, Divergence, Curl and their properties (without identities).

**Vector Integration:** Line Integrals –Potential functions- Area, Surface and Volume integrals - Green's theorem- Stoke's theorem& Gauss Divergence theorems (without proof) – problems on Green's, Stoke's and Gauss's Theorem

**Text Books:**

1. B.V.Ramana, A Text book of Engineering Mathematics-I, Tata McGrawhill
2. T.K.V.Iyengar, B.Krishna Gandhi and others, A Text book of Engineering Mathematics –I, S.Chand and company.
3. Dr.B.S.Grewal, Higher Engineering Mathematics.
4. E.Rukmangadachari and Keshava Reddy, A Text book of Engineering Mathematics-I, Pearson Education

**References:**

1. C.Sankaraiah,A Text book of Engineering Mathematics, VGS book links
2. Thomson, A Text book of Engineering Mathematics, Book Collection
3. N.Bail, M.Goyal&C.Walking, A Text book of Advanced Engineering Mathematics - A computer approach

# SRI VENKATESWARA COLLEGE OF ENGINEERING AND TECHNOLOGY

(AUTONOMOUS)

**14AHS04 ENGINEERING PHYSICS**  
(Common to EEE, ECE, CSE & IT)

L	T	P	C
3	1	-	3

**I B.Tech - I Semester(IT)**

## Objectives:

1. To introduce basic physics concepts relevant to different branches of Engineering and Technology
2. To prepare graduates in understanding the basic principles of Modern Optics, Solid State Physics and their possible applications.
3. They shall also understand the role of the physics in the development of newer innovations and technologies

## Outcomes

1. Graduates will be able to apply the knowledge of Physics in the field of Communications, Electrodynamics, Solid State Physics and Optics.
2. The acquaintance of basic physics principles would help the engineers to develop or understand the working of different tools and devices
3. It equips the students with the fundamental knowledge of physics together with the problem solving skills and understanding.

## UNIT I

**OPTICS:** Interference- Interference in thin films by reflection – Newton Rings. Diffraction- Fraunhofer diffraction due to single slit-Diffraction Grating.

### MODERN OPTICS

Introduction to lasers – Characteristics of lasers – Spontaneous and stimulated emission of radiation – Einstein's coefficients – population inversion – Ruby laser - He-Ne laser Applications of laser. Introduction to fiber optics – Principle of optical fiber – Acceptance angle and acceptance cone – Numerical aperture – Classification of Optical Fibers- Attenuation in optical fibers – Optical fiber communication system- Applications of optical fibers.

## UNIT II

**CRYSTAL STRUCTURES AND X-RAY DIFFRACTION:** Introduction – Space lattice – Basis – Unit cell – Lattice parameter – Crystal systems – Bravais lattices – Structure and packing fractions of Simple cubic, body centered cubic, face centered cubic crystals-Directions and planes in crystals – Miller Indices – Separation between successive  $[h k l]$  planes – Bragg's law-X-Ray Diffraction by Powder method

**ULTRASONICS** Introduction – Production of ultrasonics by piezoelectric method – Properties and detection of Ultrasonic waves – Applications in non-destructive testing.

## UNIT III

**PRINCIPLES OF QUANTUM MECHANICS:** Wave and particles – de Broglie hypotheses – Matter waves – Schrödinger time independent wave equation – Physical significance of wave function – Particle in one dimensional box

**FREE ELECTRON THEORY:** Classical free electron theory – Equation for electrical conductivity - Quantum free electron theory – Fermi-Dirac distribution – Kronig-Penny model (qualitative)

## UNIT IV

**DIELECTRIC PROPERTIES:** Introduction – Dielectric constant – Electronic, Ionic and Oriental polarizations (qualitative) – Local Field- Clausius-Mossotti equation – Piezoelectricity - Ferroelectricity.

## MAGNETIC PROPERTIES

Introduction – magnetic moment – Classification of magnetic materials – Hysteresis curve – Hard and Soft Magnetic Materials-Applications.

## UNIT V

**SEMICONDUCTORS:** Introduction – Intrinsic and extrinsic Semiconductors–Fermi level–Equation of conductivity - Drift and diffusion – Einstein's equation – Hall Effect.

**SUPERCONDUCTORS:** General properties of superconductors – Meissner effect – Penetration depth – Type I and Type II superconductors – Flux quantization – Josephson effect – Application of superconductors.

**NANOMATERIALS:** Introduction– Basic principles of nanomaterials – Growth of nanomaterials: Sol-Gel method–Chemical vapor deposition–Properties of nanomaterials–Carbon Nano Tubes - Application of carbon nano tubes and nanomaterials.

### Text Books:

1. Avadhanulu and Kshirasagar A Text book of Engineering Physics, Revised Edition, S.Chand, New Delhi 2014
2. Gaur and Gupta: Engineering Physics, New Delhi, DhanpatRai Publishers, 2010
3. K. Thyagarajan: Engineering Physics, Delhi, Tata McgrawHill Publishers, 2013.

### Reference Books:

1. Pillai.S.O: Solid State Physics, 6<sup>th</sup>edition, NewDelhi:New Age International, 2005.
2. Chattopadhyay, K.K; Banerjee,A.N: Introduction to Nano Science and Technology, New Delhi: PHI,2009 .
3. Resnick, Halliday and Walker: Fundamentals of Physics, 9<sup>th</sup> Edition, New Delhi: Wiley Publishers, 2010.

# SRI VENKATESWARA COLLEGE OF ENGINEERING AND TECHNOLOGY

(AUTONOMOUS)

**14AHS05 ENVIRONMENTAL SCIENCE**  
(Common to EEE, ECE, CSE & IT)

**L T P C**  
**3 1 - 3**

## I B.Tech- I Semester(IT)

### Objectives:

1. To study about conservation of natural resources, environmental monitoring & remediation, Industrial waste management and public health.
2. To develop analytical skills, critical thinking & demonstrate problem solving skills using scientific and engineering techniques.
3. To motivate the students to participate in environment protection and make man free from all sorts of environmental problems.

### Outcomes:

After completion of the course the student will be able to

4. develop critical thinking (or) observation skills and apply them in the analysis of a problem (or) question related to the environment.
5. analyse and interpret the complex relationships between natural and human systems.
6. analyse and interpret the fundamental physical, chemical and biological principles that govern natural process.
- 7.

### UNIT-I

**ENVIRONMENT AND NATURAL RESOURCE MANAGEMENT:** Definition, Scope and Importance of Environmental Science, Need for Public Awareness, Components of Environment (Atmosphere, Hydrosphere, Lithosphere and Biosphere) Renewable and non-renewable Natural resources and associated problems: **Forest resources:** Use and over-exploitation, deforestation, case studies – Timber extraction, Mining, Dams and other effects on forest and tribal people. **Water resources:** Use and over utilization of surface and ground water, Floods, Drought, conflicts over water, dams-benefits and problems. **Food resources:** Sources of food, impacts of overgrazing, effects of modern agriculture, fertilizer-pesticide problems, water logging, salinity, case studies. **Energy resources:** Renewable and Non-renewable energy resources

### UNIT-II

**ECOSYSTEMS:** Concept of an ecosystem, Structure and function of an ecosystem (Producers, Consumers and decomposers) – Energy flow in the ecosystem – Food chains, food webs and ecological pyramids – Ecological Succession.

TYPES OF ECOSYSTEMS:

- a. Forest ecosystem
- b. Grassland ecosystem
- c. Desert ecosystem
- d. Aquatic ecosystem (ponds, streams, lakes, rivers, oceans, estuaries)

### UNIT-III

**BIODIVERSITY AND ITS CONSERVATION:** Introduction, Definition, Types of biodiversity (genetic, species and ecosystem diversity)- Bio-geographical classification of India, Values of biodiversity(Consumptive use, Productive use, Social use, Ethical use, Aesthetic and Option values)- India as a mega diversity nation-Hot spots of India-Threats to biodiversity(habitat loss, Poaching of wildlife, man-wildlife conflicts)-Endangered and endemic species of India-Conservation of biodiversity(In-situ and Ex-situ conservation of biodiversity).

### UNIT-IV

**ENVIRONMENTAL POLLUTION AND ACT'S:** Definition, causes, effects and control measures of:

a. Air Pollution b. Water Pollution c. Soil Pollution d. Noise Pollution e. Thermal Pollution  
f. nuclear hazards.

**Solid Waste Management:** Causes, effects and control measures of urban and industrial wastes.

**ACT'S:** Environment Protection Act-Air (Prevention and Control of Pollution) Act-Water (Prevention and control of Pollution) Act-Wildlife Protection Act-Forest Conservation Act-

**Disaster management:** Floods, Earthquake, Cyclone and Landslides.

## **UNIT-V**

**SOCIAL ISSUES AND THE ENVIRONMENT:** From unsustainable to sustainable development, Water conservation(rainwater harvesting, watershed management)-Resettlement and rehabilitation of people its problems and concerns, Environmental ethics, Global warming, Acid rain, Ozone layer depletion-Population growth, variation among nation, Population explosion-Family Welfare Programme-Environment and human health-Human Rights-Value Education-HIV/AIDS-Women and Child Welfare Programmes-Role of Information Technology in Environment and human health.

**Field Work:** Visit to local polluted site-Urban/Industrial.

### **Text Books:**

1. ErachBharucha, *Textbook of Environmental Studies for Undergraduate courses by from UGC.*
2. Dr.RaghavanNambiar.K, *Text Book of Environmental Studies, Sitech publications, 2010.*
3. Benny Joseph, *Environmental Studies by Mc.GrawHill Publications, 2010.*

### **References:**

1. Dr.Suresh.K.Dhameja, *Environmental Studies, S.K. Kataria & Sons Publishers, 2012.*
2. Sharma. J.P., *Comprehensive Environmental Studies, Laxmi Publications, 2010.*

**SRI VENKATESWARA COLLEGE OF ENGINEERING AND TECHNOLOGY**

**(AUTONOMOUS)**

<b>14AEE03</b>	<b>BASIC ELECTRICAL ENGINEERING</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(Common to CSE &amp; IT)</b>		<b>3</b>	<b>1</b>	<b>-</b>	<b>3</b>

**I B.Tech - I Semester(IT)**

**Objectives:**

1. *To understand the Basic Fundamentals in Electrical Circuits.*
2. *To study the construction, Principle of operation and performance of DC and AC Machines*
3. *To understand the Principle of Measuring Instruments.*

**Outcomes:**

*After completion of this course the students will be able to:*

1. *Understand the fundamentals of Electrical Circuits*
2. *Acquire the concept of all types of Electrical Machines like DC and AC Machines*
3. *Know the principle of Measuring Instruments*

**UNIT I**

**INTRODUCTION TO ELECTRIC CIRCUITS:** Circuit element – Sources - Ohm’s Law - Kirchhoff’s Law - Network reduction Techniques, Mesh and Nodal Analysis. Sinusoidal Alternating Quantities – Concept of Frequency, Period, Phase, Average and RMS Values – Concept of Impedance- Simple Problems.

**UNIT II**

**NETWORK THEOREMS:** Thevenin’s, Norton’s, Superposition and Maximum Power Transfer Theorem - Simple Problems with DC & AC excitation.

**UNIT III**

**DC MACHINES:** Construction - Principle of Operation and EMF Equation - Different Types of Generators - DC Motor Operation – Different Types – torque Equation – Efficiency - Application of DC Machines.

**UNIT IV**

**AC MACHINES:** Single Phase Transformer - Principle of Operation, EMF Equation, Losses, Efficiency and Regulation - Three Phase Induction Motors (Squirrel and cage rotor) – Slip-Torque Characteristics and Application – Three Phase Alternator - Principle of Operation, EMF Equation – Regulation by EMF Method.

## **UNIT V**

**MEASURING INSTRUMENTS:** Principle of Operation of Moving Coil and Moving Iron Types of Ammeters and Voltmeters – Extension of Range - Principle of Operation of Wattmeter and Energy Meter

### **TEXT BOOKS:**

1. HUGHES: Electrical and Electronic Technology, Pearson Publications.
2. Principles of Electrical Engineering, wincent&Deltoro –PHI, 2010.

### **REFERENCE BOOKS:**

1. J.P. Nagrath& D. P Kothari: Basic Electrical Engineering, PHI Publications.



**SRI VENKATESWARA COLLEGE OF ENGINEERING AND TECHNOLOGY**

**(AUTONOMOUS)**

<b>14ACS01</b>	<b>PROBLEM SOLVING AND COMPUTER PROGRAMMING</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(Common to CSE &amp; IT)</b>		<b>3</b>	<b>2</b>	<b>-</b>	<b>4</b>

**I B.Tech - I Semester(IT)**

**Objectives:**

The course presents basics of C programming including Data representation, Control Structures, Functions, Arrays, Pointers, Strings, and Files that enables the students to:

1. *Understand the basic components of computing environment.*
2. *Design and develop algorithms and flowcharts for solving a problem.*
3. *Be familiar with the importance of control flow statements in programming.*
4. *Know structured programming approach to solve real time applications.*

**Outcomes:**

Upon completion of this course, students will be able to:

1. *Apply the principles of structured programming in problem solving.*
2. *List out the salient features and applications of C programming language.*
3. *Demonstrate the techniques for implementing applications using C programming.*
4. *Develop C programming skills to do variety of tasks like low level programming, networking, and OS related operations and so on.*

**UNIT – I**

**Introduction to Computers, Computer Problem Solving and C Language**

**Introduction to Computers:** Computer Systems, Computing Environment, Computer Languages, Creating and Running Programs and System Developments.

**Introduction to Computer Problem Solving:** The problem solving aspect, Top-Down Design, Bottom-Up approach, Flowcharts, Implementation of Algorithms, The Efficiency of Algorithms, Program Verification.

**Introduction to C Language:** The C Character Set, Identifiers and Keywords, Data Types, Variables and Constants, Structure of a C program, Input and Output, Programming examples.

**UNIT – II**

**Fundamental Algorithms, Selection and Making Decision and Iterative Statements**

**Fundamental Algorithms:** Exchanging the values between two variables, Counting, Summation of a set of numbers, Factorial computation, Sine function computation, Generation of the Fibonacci sequence, Reversing the digits of an integer, Basic conversion, Character to Number Conversion.

**Selection and Making Decision:** Logical data, Operator – Types of operators,

Expression - Precedence and Associativity, Evaluation of Expressions, Type Conversion, Conditional and Unconditional Statements.

**Iterative Statements:** Concept of a loop – Pretest and Posttest loops, Event and Counter Controller loops, Looping application.

**UNIT – III**

**Factoring Methods, Functions, Arrays and Array Techniques**

**Factoring Methods:** Finding square root of a number, The smallest divisor of an Integer, The GCD of two integers, Generating prime numbers, Computing prime factor of an Integer, Generation of Pseudo random number, Raising the number to large power, Computing the  $n^{\text{th}}$  Fibonacci.

**Functions:** Definition, Accessing a function, Inter function communication by Call-by-value, Call-by-reference (address), Standard library functions, Scope.

**Arrays:** Introduction, Two-Dimensional arrays, Multi-Dimensional arrays, Inter function communication with array elements, Array applications.

**Array Techniques:** Array order reversal, Array counting, Finding the maximum number set, Removal duplicates from an ordered array, Partitioning an array, Finding k<sup>th</sup> smallest element, Longest Monotone Subsequence.

#### **UNIT – IV**

##### **Enumerated, Structure and Union Types, Strings**

**Enumerated, Structure and Union Types:** The Type definition ( typedef), Enumerated Types

(enum), Definition and Declaration of Structures, Accessing Structures and Nested Structures, Arrays of Structures, Structures and functions, Union, Programming applications.

**Strings:** Basics, String input / output function, Arrays of Strings, String manipulation functions, String / Data conversion.

#### **UNIT – V**

##### **Pointers, Pointer Applications and Files**

**Pointers:** Introduction, Pointer arithmetic and Arrays, Pointers to Pointers, Pointers for Inter function communications, Compatibility, Lvalue and Rvalue.

**Pointer Applications:** Dynamic Memory Allocation, Passing an array to a function, Passing structures through pointers, Pointers and functions, Pointers and strings.

**Files:** Why files, Text and Binary files, Basic operations on files, Standard library functions for files, Converting file type and Command-line parameters.

#### **TEXT BOOKS**

1. R.G. Dromey, "How to Solve it by Computer", Low Price Edition, Pearson Education India, 2008.
2. Ashok Kamthane, "Programming in C", Second Edition, Pearson Education India, 2011.

#### **REFERENCES**

1. Brian W. Kernighan, Dennis M. Ritchie, "The C Programming Language", Second Edition, Prentice Hall, 1988.
2. Stephen G. Kochan, "Programming in C (Developer's Library)", Fourth Edition, Addison Wesley Professional, 2014.
3. WikiBooks, "C Programming ",opensource-books, 2014.
4. Greg Perry, Dean Miller, "C Programming Absolute Beginner's Guide (Absolute Beginner's Guide)", Third Edition, Que Publishing, 2013.
5. Robert C. Seacord, "The CERT® C Coding Standard: 98 Rules for Developing Safe, Reliable, and Secure Systems (SEI Series in Software Engineering Series)", Addison Wesley Professional, 2014.
6. Binu A, "Problem Solving and Computer Programming Using C", Laxmi Publications, Ltd., 2010.



**SRI VENKATESWARA COLLEGE OF ENGINEERING AND TECHNOLOGY**

**(AUTONOMOUS)**

**14AME03 ENGINEERING WORKSHOP**

**L T P C**

**(Common to EEE,ECE,CSE & IT)**

**- - 3 2**

**I B.Tech - I Semester(IT)**

**Objectives:**

1. *To understand the basic work shop tools and operations such as carpentry, fitting & sheet metal trades.*
2. *To understand the basic work tools of house wiring & house wiring connections etc.*
3. *To understand the basic joints and manufacturing processes such as foundry and welding.*

**Outcomes:**

*After completion of the study of this lab a student will be able to:*

1. *Distinguish between tools of various trades such as carpentry, fitting, sheet metal, welding, foundry & house wiring.*
2. *Explain the tools & connections pertaining to house wiring, stair case wiring etc.*
3. *To describe the use of carpentry & fitting joints such as lap, dovetail, mortise, tenon joint, various sheet metal models & manufacturing processes.*

**1. TRADES FOR EXERCISES:**

**a. Carpentry shop**– Two joints (exercises) involving tenon and mortising, groove and tongue: Making T lap joint, cross lap joint, Dovetail lap Joint, mortise and tenon joint, T - Bridle joint from out of 300 x 40 x 25 mm soft wood stock

**b. Fitting shop**– Two joints (exercises) from: square joint, V joint, half round joint and dovetail joint out of 100 x 50 x 5 mm M.S. stock

**c. Sheet metal shop**– Two jobs (exercises) from: Tray, cylinder, hopper and funnel from out of 22 or 20 guage G.I. sheet

**d. House-wiring**– Two jobs (exercises) from: wiring for two lamps (bulbs) with independent switch controls with or without looping, wiring for stair case lamp, wiring for Tube Light and wiring for a water pump with single phase starter.

**e. Foundry**– Preparation of two moulds (exercises): for a single Piece pattern and a Two Piece pattern.

**f. Welding** – Preparation of two welds (exercises): single V butt joint, lap joint, Square butt Joint and fillet weld.

**2. TRADES FOR DEMONSTRATION:**

**a. Plumbing    b. Machine Shop    c. Metal Cutting**

Apart from the above the shop rooms should display charts, layouts, figures, circuits, hand tools, hand machines, models of jobs, materials with names such as different woods, wood faults, Plastics, steels, meters, gauges, equipment, CD or DVD displays, First aid, shop safety etc. (though they may not be used for the exercises but they give valuable information to the student). In the class work or in the examination knowledge of all shop practices may be stressed upon rather than skill acquired in making the job.

**REFERENCE BOOKS:**

1. P.Kannaiah/ K.L.Narayana, Work shop Manual, SciTech Publishers.
2. Jeyapoovan, SaravanaPandian, Engineering Practices Lab Manual 4/e Vikas
3. GHF Nayler, Dictionary of Mechanical Engineering, Jaico Publishing House.

**SRI VENKATESWARA COLLEGE OF ENGINEERING AND TECHNOLOGY  
(AUTONOMOUS)**

**14ACS03      COMPUTER PROGRAMMING LAB  
(Common to CSE & IT)**

**L   T   P   C  
-   -   3   2**

**I B.Tech - I Semester(IT)**

**Objectives:**

The main objective of conducting this lab is to enable the students to:

1. Know C programming development environment, compiling, debugging, linking and executing a program using the development environment.
2. Apply the syntaxes of control statements and loop structures.
3. Analyze the complexity of problems, modularize the problems into small modules and then convert them into programs.
4. Learn about pointers, memory allocation techniques and use of files for dealing with variety of problems.

**Outcomes:**

After performing this lab, the students should be able to:

1. Get practical knowledge about how to use concepts of C and Data structures for solving a problem.
2. Acquire and apply knowledge on pointers, memory allocation and files for dealing with variety of real world problems.
3. Compete the industry professional in analyzing and documenting a structured program by applying the coding standards.
4. Understand and apply the in-built functions and customized functions for solving the problems.

**Week 1**

a) Write a C program to exchange the values between two variables with and without using temporary variable.

b) Sum of the individual digits means adding all the digits of a number. Ex: 123, sum of digits is  $1+2+3=6$ .

Write a C program to find the sum of individual digits of a positive integer.

c) Write a C program to generate all the factors of 4 and 7 between 1 and n and count their value, where n is a value supplied by the user.

**Week 2**

a) Write a C program to compute the factorial of a given number.

b) Write a C program to compute the Sine function.

**Week 3**

a) A Fibonacci sequence is defined as follows: the first and second terms in the sequence are 0 and 1. Subsequent terms are found by adding the preceding two terms in the sequence. Write a C program to generate the first n terms of the sequence.

b) Write a C program to reverse the digits of a given integer.

#### **Week 4**

- a) Write a C program to convert the given decimal number into its equivalent binary, octal and hexadecimal number.
- b) Write a C program to calculate the following:  $\text{Sum} = 1 - x^2/2! + x^4/4! - x^6/6! + x^8/8! - x^{10}/10!$ .
- c) Write a C program, which takes two integer operands and one operator from the user, performs the operation and then prints the result. (Consider the operators +, -, \*, /, % and use Switch Statement).

#### **Week 5**

- a) Write C program to display the result of a student by considering the standard grades.
- b) Write a C Program to find both largest and smallest in the given list of integers.

#### **Week 6**

- a) Write a C program to generate Pascal's triangle.
- b) Write a C program to construct a pyramid of numbers.

#### **Week 7**

Write a C program

- i) To find the square root of a given integer.
- ii) To find the smallest divisor of an integer.
- iii) To raise the number to large power.
- iv) To generate the prime numbers from 1 to n, where n is the value supplied by the user.

#### **Week 8**

Write a C program

- i) To compute the prime factor of an integer.
- ii) To generate the pseudo random number.
- iii) To find the GCD (greatest common divisor) of two given integers.
- iv) To compute the  $n^{\text{th}}$  Fibonacci number.

#### **Week 9**

- a) Write a C program to find both the largest and smallest number in a list of integers.
- b) Write a C program that uses functions to perform the following:
  - i) Addition of Two Matrices
  - ii) Multiplication of Two Matrices.

#### **Week 10**

- a) Write a C program that uses functions to perform the following operations:
  - i) Reading a complex number
  - ii) Writing a complex number
  - iii) Addition of two complex numbers
  - iv) Multiplication of two complex numbers

(Note: represent complex number using a structure.)

b) Write a C Program to find whether the given string is a palindrome or not.

### **Week 11**

a) Write a C program that uses functions to perform the following operations:

i) To insert a sub-string in to a given main string from a given position.

ii) To delete n Characters from a given position in a given string.

b) Write a C program to count the lines, words and characters in a given text.

### **Week 12**

a) Write a C program to display the contents of a file.

b) Write a C program to merge two files into a third file (i.e., the contents of the first file followed by those of the second are put in the third file).

### **Week 13**

a) *Write a C program using command line arguments to search for word in file and replace it with the specific word.*

b) Write a C program

i) To write macro definition to test whether a character is lowercase or not.

ii) To check whether a character is alphabet or not.

iii) To obtain the largest of two numbers.

c) Write a C program to concatenate two strings using command line arguments.



**SRI VENKATESWARA COLLEGE OF ENGINEERING & TECHNOLOGY  
(AUTONOMOUS)**

<b>14AHS01 TECHNICAL ENGLISH-I (Common to EEE, ECE, CSE &amp; IT)</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
	<b>3</b>	<b>-</b>	<b>-</b>	<b>3</b>

**I B.Tech - II Semester(IT)**

**Objectives:**

1. *To improve the language proficiency of the students in English with an emphasis on LSRW Skills.*
2. *To strengthen the students to study academic subjects through theoretical and practical components of the syllabus.*
3. *To comprehend the growing demand for English in the modern world.*
4. *To enumerate the aims of teaching English in India.*

**Outcomes:**

1. The students will learn the language by observing the rules of grammar, vocabulary and composition that are necessary.
2. Students are made to appreciate the intelligent and innovative use of rules in order to be able to generate creative output in tune with the demands of industry and the corporate world.
3. *After the course, the students will improve their power of comprehension and the ability to express themselves through listening, reading, speaking and writing.*
4. *The students will be able to distinguish between formal English and functional English.*

**UNIT-I-EMERGING TECHNOLOGIES:**

Solar Thermal Power-Cloud Computing

**UNIT-II ENVIRONMENTAL CONSCIOUSNESS:**

Climate Change- Green cover-Pollution

**UNIT-III ENERGY:**

Renewable and Non-Renewable sources-Alternative sources-Conservation-Nuclear Energy

**UNIT-IV ENGINEERING ETHICS:**

Challenger Disaster-Biotechnology-Genetic Engineering-Protection

From Natural Calamities

**UNIT-V TRAVEL AND TOURSIM:**

Advantages and Disadvantages of Travel –Tourism - AtithiDevoBhava-Tourism in India.

- ***The teacher shall cover the following components which are given as exercises in the prescribed text book while teaching each of the five units listed above.***

## **REMEDIAL GRAMMAR:**

1. Articles
2. Prepositions
3. Time & Tense
4. Sentence Construction-Strategies (avoiding Repetition and ambiguity)
5. Sentence Transformation (Degrees, Voice, Speech & Synthesis)
6. Common Errors in English

## **VOCABULARY:**

1. *Roots-Prefixes-Suffixes(RPS Method)*
2. *Synonyms*
3. *Antonyms*
4. *Phrasal Verbs*
5. *Idioms*
6. *One-word substitutes*

## **WRITING PRACTICE (COMPOSITION):**

1. *Paragraph-Writing(Descriptive, Narrative, Persuasive, Expository and Creative)*
2. *Summarizing*
3. *Note-Making and Note taking*
4. *Letter-Writing (Formal & Informal)*
5. *Report writing*

## **Texts for classroom study:**

(Prescribed Text book: Mindscapes-English for Technologies and Engineers, published by Orient Black Swan, 2012)

## **Reference Books:**

1. M. Ashraf Rizwi, "Technical English Communication", Tata McGraw Hill, Latest Edition.
2. V.R. Narayana Swamy, "Strengthen Your Writing", 1<sup>st</sup> edition, Orient longman, 2003.
3. Thomas Elliot Berry."The Most Common Mistakes in English Usage", 1<sup>st</sup> Edition, Tata McGraw Hill, 2004.
4. Margaret M Maison," Examine your English", 1<sup>st</sup> edition, Orient Longman, 1999.
5. Andrea J Rutherford , Basic communication skills for Technology, Pearson Education, Asia.
6. Meenakshi Raman Sangeetha Sharma, Technical communication , Oxford
7. Cambridge International of Phrasal Verbs, Cambridge.
8. Martin Hewings, Essential English Grammar , Cambridge
9. John Eastwood, Oxford Practice Grammar, Oxford.
10. Daniel Jones, English Pronouncing Dictionary, Oxford.

### **Question Paper Pattern:**

From the prescribed text book without leaving any lessons:

- |                         |                     |
|-------------------------|---------------------|
| 1. Three mark questions | <b>4 x 3 = 12M</b>  |
| 2. Ten Mark questions   | <b>2 x 10 = 20M</b> |

*Based on the Grammar exercises given in the prescribed Text Book.*

- |                              |           |
|------------------------------|-----------|
| 3. Reading Comprehension – I | <b>5M</b> |
| 4. Synonyms & Antonyms       | <b>5M</b> |
| 5. Prefixes & Suffixes       | <b>5M</b> |
| 6. Tense Forms               | <b>4M</b> |
| 7. Compound words            | <b>2M</b> |
| 8. Prepositions & Articles   | <b>2M</b> |
| 9. Idioms                    | <b>2M</b> |
| 10. Jumbled Sentences        | <b>5M</b> |
| 11. Letter writing           | <b>8M</b> |

Total	<hr/> <b>70M</b> <hr/>
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# SRI VENKATESWARA COLLEGE OF ENGINEERING AND TECHNOLOGY

(AUTONOMOUS)

<b>14AHS06</b>	<b>ENGINEERING MATHEMATICS-II</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(Common to all branches)</b>		<b>3</b>	<b>1</b>	<b>-</b>	<b>3</b>

**I B.Tech -II Semester(IT)**

## Objectives:

*The objectives of this course are to*

1. *conceptualise the basics and applications of matrices, interpolation, partial differential equations and transforms.*
2. *model a wide range of engineering and practical problems into any of the above suitable forms.*
3. *apply fundamental mathematical principles as well as computational techniques to the problems of engineering and scientific practice.*

## Outcomes:

*After completion of the course the student will be able to*

1. comprehend the areas of application of matrices, interpolation, partial differential equations and transforms.
2. apply the principles of matrices, curve fitting, partial differential equations, transforms etc. to the engineering and scientific problems.
3. obtain their solutions using various computational methods.

## UNIT-I

**MATRICES:** Rank of a matrix-Echelon form, Normal form -solution of linear system of homogeneous and non-homogeneous equations -Gauss elimination method.

Eigen values and Eigen vectors -Cayley-Hamilton theorem - Linear Transformations - Orthogonal transformations -Diagonalization of a matrix. Quadratic forms- Reduction of Quadratic form to Canonical form and their nature.

## UNIT-II

**SOLUTION OF ALGEBRAIC AND TRANSCENDENTAL EQUATIONS:** Introduction - The Bisection method - The method of false position - Newton - Raphson method.

**Curve Fitting:** Fitting a straight line - Second degree curve- Exponential curve - Power curve by method of least squares.

**Interpolation:** Forward Differences - backward differences-Newton's forward and backward differences formulae for interpolation - Lagrange's interpolation formula - Inverse interpolation.

## UNIT-III

Numerical differentiation-First and second order derivatives- . Numerical integration-Trapezoidal rule - Simpson's 1/3 rule - Numerical solutions of ordinary differential equations by Taylor's series-Picard's method of successive Approximations - Euler's Method - Runge-Kutta Methods - Predictor - corrector method - Milne's method

## **UNIT-IV**

**FOURIER SERIES:** Fourier series- Even and odd functions-Fourier series in an arbitrary interval -  
- Half-range Fourier sine and cosine expansions. Fourier integral theorem (statement) -Fourier sine  
and cosine integrals. Fourier Transforms - Fourier sine and cosine Transforms.

## **UNIT-V**

**PARTIAL DIFFERENTIAL EQUATIONS:** Formation of partial differential equations by elimination  
of arbitrary constants and arbitrary functions - Method of separation of variables - solution of one  
dimensional wave equation, heat equation and two – dimensional Laplace's equation.

**Z-TRANSFORMS:** Inverse Z- transforms – Properties - Damping rule- Shifting rule - Initial and  
final value theorems. Convolution theorem - Solution of difference equations by Z- transforms.

### **Text Books:**

1. Iyengar T.K.V., Krishna Gandhi.B and others, Mathematical Methods, New Delhi, S.Chand&  
company,2012.
2. Sankarrao G.,KesavReddy.E, Mathematical Methods, International publishing house,Pvt.ltd
3. Sastry .S.S., Introduction to Numerical analysis, New Delhi, Prentice Hall of India,2003
4. Dr..Grewal.B.S, Higher Engineering Mathematics, New Delhi, Khanna Publishers,2004

### **References:**

1. Erwin Kreyszig, Advanced Engineering Mathematics, John Wiley & Sons.
2. Jain.M.K, IyengarT.K.V, Jain.R.K. Numerical Methods for Scientific and Engineering  
Computation, Newage International publishers.
3. Pal, Mathematical Methods, Oxford University Press,2009.
4. Ranganatham.S, Prasad M.S.S.N., Ramesh Babu.V, Numerical Analysis, S.Chand& company
5. Sankaraiah .C, Mathematical Methods, Vijayawada,V.G.S Book links,2007.

# SRI VENKATESWARA COLLEGE OF ENGINEERING AND TECHNOLOGY

(AUTONOMOUS)

<b>14AHS03</b>	<b>ENGINEERING CHEMISTRY</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(Common to EEE, ECE, CSE &amp; IT)</b>		<b>3</b>	<b>1</b>	<b>-</b>	<b>3</b>

## I B.Tech - II Semester(IT)

### Objectives:

1. To study the effect of hard water and its treatment for various purposes, corrosion and control of metallic materials,
2. To study the engineering materials such as high polymers namely plastics, rubbers and their preparation, properties and applications along with lubricants, refractories & cement with its applications.
3. To study the calorific value of fuels, combustion of fuels, working of batteries, recharging of batteries, application of different fuel cells.

### Outcomes:

After completion of the course students will be able to understand

1. the impact of hard water and its removal, formation of corrosion, effect of corrosion and designing of corrosion resistance articles.
2. selection of suitable engineering materials for specific applications.
3. selection of suitable fuels, calculation of air requirements for combustion of fuel, applications of different batteries and fuel cells.

### UNIT – I: WATER TECHNOLOGY

Hardness of Water and its unit of expression – Estimation of hardness in water by EDTA titration method – Numerical problems – Effect of different water impurities (Hardness, Dissolved Oxygen and Chlorides) on boiler troubles – Water softening methods – zeolite process – Ion Exchange process – Demineralization of Brakish Water – Electrodialysis and Reverse Osmosis.

### UNIT – II: CHEMISTRY OF CORROSION

Dry and Wet corrosion – causes of corrosion – mechanism of corrosion – Galvanic series – Galvanic and Concentration cell corrosion – Factors influencing the corrosion – Control of corrosion – Cathodic protection – Sacrificial anodic and Impressed current cathodic protection – Electro Plating and Electroless plating (Copper and Nickel).

### UNIT – III: MATERIALS CHEMISTRY

#### Organic (High Polymers & Lubricants)

**Plastics:** Thermosetting and thermoplastics – Engineering applications and properties of PE, PTFE, PVC, Nylon and Bakelite.

**Rubbers:** Processing of Natural Rubbers – Vulcanization – Compounding of Rubber – Synthetic Rubber – Buna S, Buna N, Silicone rubber properties and applications.

**Lubricants:** Definition– Function of Lubricants – Classification of Lubricants – Properties of Lubricants (Viscosity Index – Flash and Fire point – Cloud and Pour point – Aniline point – Neutralization number – Mechanical strength).

#### Inorganic (Refractories & Cement)

**Refractories:** Definition – Classification – Important properties of refractories (Refractoriness, RUL, Thermal stability, Porosity, Dimensional stability and Mechanical strength).

**Cement:** Definition– Composition – Classification of cements – Setting and Hardening of cement.

#### **UNIT – IV: FUELS AND COMBUSTION**

**Fuels:** Classification of Solid, Liquid and Gaseous fuels – Calorific value – HCV, LCV. Measurement of calorific value using Bomb calorimeter and Junkers gas calorimeter – Numerical problems – Fuel rating system – Octane and Cetane numbers and their influence on I.C. Engines.

**Combustion:** Combustion products and calculation of air requirement (numerical problems) – Flue gas analysis by Orsat's apparatus.

#### **UNIT – V: ELECTROCHEMICAL CELLS**

Electrochemical Cells – Standard electrode potential – Working principles and applications of different batteries – Dry cell, Lithium-ion cell, Lead-acid cell and Nickel-cadmium cell. Recharging of Batteries – Battery rating (A-h rating) – Working principles and applications of hydrogen-oxygen and methanol-oxygen fuel cells – Principle of solar cells.

#### **Text Books:**

1. Prof. K.N.Jayaveera, Dr.G.V.Subba Reddy and Dr.C. Ramachandraiah, *Chemistry for Engineers, McGraw Hill Higher Education Hyd., 3<sup>rd</sup> edition, 2009.*
2. S.S. Dara and S.S. Umare, *A text book of Engineering Chemistry: S. Chand & Co. Ltd., 12<sup>th</sup> edition, 2010.*
3. Jain & Jain, *A text book of Engineering Chemistry: DhanpatRai Publishing Company, 15<sup>th</sup> edition, New Delhi, 2008.*

#### **Reference Books:**

1. Dr. K. B. Chandrasekhar, Dr. U.N. Dash, Dr. Sujatha Mishra, *Engineering Chemistry: ScitechPublications(India) Pvt. Limited, Hyderabad, 2009.*
2. C.V. Agarwal, C. Parameswara Murthy and Andra Naidu, *Chemistry of Engineering Materials: BS Publications, Hyderabad, 9<sup>th</sup> edition, 2006.*

**SRI VENKATEWARA COLLEGE OF ENGINEERING AND TECHNOLOGY**

**(AUTONOMOUS)**

**14AME01     ENGINEERING DRAWING**

**L   T   D   C**

**(Common to EEE, ECE, CSE & IT)**

**2   -   4   4**

**(First Angle Projection)**

**I B.Tech- II Semester(IT)**

**Objectives:**

*To understand*

1. *The importance of Engineering Drawing and get enhanced imagination capacity.*
2. *The Use of Engineering Drawing instruments and improve free hand Lettering.*
3. *The principles of orthographic projections and Preparation of pictorial drawings.*

**Outcomes:**

*After completion of this course, the student will be able to:*

1. *Prepare pictorial drawings as per the standards.*
2. *Communicate his/her ideas effectively by using orthographic projections.*
3. *Prepare the development of surfaces of engineering objects.*

**Introduction**

Drawing Instruments and their uses, BIS conventions, Lettering, Dimensioning and free hand practicing. Geometrical constructions – construction of polygons – drawing tangents – dividing a line into number of equal divisions.

**Unit-I**

Principles of projection – both first and third angle – Projections of points – Projections of straight lines- lines inclined to both the principal planes, determination of true length and true inclinations.

**Unit-II**

Projections of planes – inclined to both the principal planes.

Projection of regular solids – prisms, pyramids, cylinders, tetrahedron and cones – axis inclined to one plane.

**Unit-III**

Sections of solids such as prisms, pyramids, cylinders, tetrahedron and cones (solids in simple position) – True shape of the section.

**Unit-IV**

Principles of isometric projection – isometric scale – isometric projection of planes and solids – conversion of orthographic views into isometric views and vice- versa.

**Unit-V**

Development of surfaces of simple solids such as prisms, pyramids, cylinders, tetrahedron, cones and part solids.

**Text Books:**

1. Narayana K L and Kannaiah P, Engineering Drawing, Scitech Publications, Chennai 2012.
2. Bhatt N D and Panchal V M, Engineering Drawing, Revised Edition, Charotar Publications, 2010.



**REFERENCES:**

1. Engineering Drawing, Johle, Tata McGraw-Hill, 2008.
2. Shah and Rana, Engineering Drawing, 2/e, Pearson Education, 2005.

**FINAL EXAMINATION QUESTION PAPER PATTERN****(External Evaluation & Paper setting)****Paper Setting:**

1. *Two questions to be set from each unit in either or choice (All Questions carries equal marks)*
2. *Student has to answer all questions.*

**SRI VENKATEWARA COLLEGE OF ENGINEERING AND TECHNOLOGY**

**(AUTONOMOUS)**

**14ACS05 DATA STRUCTURES**

**L T P C**

**(Common to CSE & IT)**

**3 1 - 3**

**I B.Tech - II Semester (IT)**

**Objectives:**

*The objective of this course is to make students to:*

1. Know the difference between linear and non-linear data structures.
2. Introduce various techniques for representation and manipulation of the data in the real world.
3. Learn implementing various data structures Stacks, Queues, Linked Lists, Trees and Graphs.
4. Choose appropriate data structure, sorting and searching technique depending on the problem to be solved.

**Learning Outcomes:**

*At the end of the course students will be able to:*

1. Understand different types of advanced abstract data types (ADT), Data structures and their implementation.
2. Handle operations like searching, insertion, deletion, traversing mechanism etc. on various data structures.
3. Apply various techniques for representation and manipulation of the data in the real world.
4. Choose appropriate sorting and searching mechanism based on the problem being solved.

**UNIT – I**

**Introduction**

**Introduction to Data Structures:** Definition, Abstract Data Type, Classification of Data Structures- Linear and Non-Linear, Applications.

**UNIT – II**

**Stacks and Queues**

**Stacks:** Basic Operations, Array and Linked representations of stacks, Stack applications- Reversing Data, Infix to Postfix Transformation, Postfix expression evaluation, Other applications of Stacks.

**Queues:** Basic Operations, Array and Linked representations, Circular Queues, Priority Queue, Dequeue, Applications of Queues.

**UNIT – III**

**Linear List**

**Linear List:** Dynamic Memory Allocation, Concepts of Linked Lists, Types of Linked Lists, Basic List Operations, Concatenating two lists, Singly Linked List implementation, Doubly Linked List and its Operations, Circularly Linked List, Application of Linked Lists.

**UNIT – IV**

**Searching and Sorting**

**Searching:** Linear and Binary search methods.

**Sorting:** Bubble sort, Selection sort, Insertion sort, Quick sort, Merge Sort.

## **UNIT – V**

### **Trees and Graphs**

**Trees:** Basic Tree Concepts, Binary Trees, Binary Tree Traversals, Applications of Binary Trees, Binary Search Trees, Spanning Trees.

**Graphs:** Introduction, Graph Representation in C, Graph Storage Structures- Adjacency Matrix, Adjacency List, Graph Traversals, Applications.

### **TEXT BOOKS**

1. *Richard Gilberg, BehrouzForouzan, "Data Structures: A Pseudocode Approach with C (Data Structures Series)", Second Edition, Cengage Learning, 2004.*
2. *Harry H. Chaudhary, "Data Structures Using C Language. 2014: Perfect Beginners Guide (Best Selling Edition Worldwide)", Createspace LLC USA, 2014.*

### **REFERENCES**

1. *A.A.Puntambekar, "Data Structures Using C", First Edition, Technical Publications, 2009.*
2. *E Balagurusamy, "Data Structures Using C", Tata McGraw-Hill Education, 2013.*
3. *Ashok N. Kamthane, "Introduction to Data Structures in C", Pearson Education India, 2007.*
4. *Horowitz, Ellis, Sahni, Sartaj, Anderson-Freed, Susan (2008), "Fundamentals of Data Structure in C", Second Edition, University Press, India.*
5. <http://nptel.ac.in/courses/106105085/> (NPTEL video lectures).

**SRI VENKATESWARA COLLEGE OF ENGINEERING & TECHNOLOGY  
(AUTONOMOUS)**

<b>14AHS07</b>	<b>TECHNICAL ENGLISH LAB – I</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>(Common to EEE, ECE, CSE &amp; IT)</b>		<b>-</b>	<b>-</b>	<b>3</b>	<b>2</b>
<b>I B.Tech - II Semester(IT)</b>					

The **Language Lab** focuses on the production and practice of sounds of language and equips students with the use of English in everyday situations and contexts.

**Objectives:**

1. To train students to use language effectively in everyday conversations and to participate in group discussions to help them face interviews, and sharpen public speaking skills.
2. To expose the students to a varied blend of self-instructional, learner-friendly modes of language learning.
3. To enable them to learn better pronunciation following the principles of stress, intonation and rhythm.
4. To help the students cultivate the habit of reading passages from the computer monitor, thus providing them with the required ability to face computer-based competitive exams such as GRE, TOEFL, GMAT etc.

**Outcomes:**

1. The students will be able to recognize English sounds- Monophthongs, diphthongs and consonant sounds.
2. The students will appreciate and use correct pronunciation in English.
3. The pupils will distinguish between Received Pronunciation and Indian variety.
4. The lab course will make the students use English with correct stress and intonation patterns because English is a rhythmic language.

**SYLLABUS:**

The following course content is prescribed for the **English Language Laboratory** sessions.

**UNIT-I** Organs of speech, speech mechanism, vowels, consonants, diphthongs, syllable division, word stress, intonation, phonetic transcription with support of speech solutions, dictionary practice with AHD & CALD software.

**UNIT-II** Speaking of past, present & future, Role play-Graded exercise with support of exercises from English Mastery, TOEFL Mastery & CALD Software.

**UNIT-III FUNCTIONAL ENGLISH-I**

Situational conversation-Grader exercises with support of Rosetta Stone Software

**UNIT-IV FUNCTIONAL ENGLISH-II**

Situational conversation-Grader exercises with support of Rosetta Stone Software

- Greeting/Self-introduction
- Expressing the cause of something
- Describe a current situation
- Speaking traditions/customs/public issues
- Making plans for vacation
- Expressing of emotions
- Shopping –bargaining price and making purchases
- Making an appointment
- Naming foods and describing tastes
- Reporting other person’s messages
- Requesting
- Asking for directions and describing
- Making suggestions, agreements and refusals

## **UNIT-V            GROUP DISCUSSIONS:**

Do's and Don'ts of a G.D, Speaking on Knowledge based, controversial or abstract topics.

### **Reference Books:**

1. English Language lab manual prepared by the Department of English
2. T. Balasubramaniam, A Text Book of English Phonetics for Indian students, Macmillan Ltd., 2000.
3. Sasikumar.V and P.V. Dhamija,. Spoken English: A Self-Learning Guide to Conversation Practice. 34<sup>th</sup> Reprint. Tata McGraw Hill. New Delhi, 1993.
4. Daniel Jones, English Pronouncing Dictionary, Current Edition with CD.
5. R.K. Bansal and J.B. Harrison, Orient Longman, Spoken English, 2006 Edn.
6. Krishna Mohan & NP Singh (Macmillan), Speaking English Effectively
7. J. Sethi, KamleshSadan and & D.V. Jindal, A Practical course in English Pronunciation, (with two Audio cassettes) Prentice- Hall of India Pvt.Ltd., New Delhi.
8. English Dictionary For Advanced Learners, (with CD) international edn. Macmillan 2009.
9. E. Suresh Kumar, P. Sreehari, A Handbook for English Language Laboratories, Foundation Books, 2009.
10. Delta's Key to the Next Generation TOEFL Test, 6 audio CDs, New Age International Publishers, 2007.

**SRI VENKATESWARA COLLEGE OF ENGINEERING AND TECHNOLOGY**

**(AUTONOMOUS)**

**14AHS08 ENGINEERING CHEMISTRY LAB**  
**(Common to EEE, ECE, CSE & IT)**  
**I B.Tech - II Semester(IT)**

**L T P C**  
**- - 3 2**

**Objectives:**

*To make the student understand the*

1. *Process of estimation of metal ions like Iron, Copper and Calcium by titrimetry; Evaluation of impurities like dissolved oxygen, oxidizable substances in water,*
2. *Process of determination of acidity and alkalinity of water sample, determination of lubricant properties like viscosity Index, Flash and Fire points,*
3. *Construction of simple phase diagram, determination of acid strength by conductometry and potentiometry.*

**Outcomes:**

*After completion of practical's student will be able to*

1. *use volumetric analysis for the estimation of metal ions, hardness of water, dissolve oxygen in water, chlorides in water, oxygen demand for water, alkalinity and acidity of water,*
2. *the importance of viscosity index, flash point and fire point of lubricants,*
3. *evaluation of eutectic temperature of binary system, the use of conductometer and potentiometer.*

Any **TEN** of the following experiments

1. *Estimation of Hardness of water by EDTA method.*
2. *Estimation of Dissolved Oxygen in Water.*
3. *Estimation of Chlorides in Water sample.*
4. *Determination of Chemical Oxygen Demand.*
5. *Determination of Acidity of Water sample.*
6. *Determination of Alkalinity of Water sample.*
7. *Estimation of Copper by EDTA method.*
8. *Estimation of Ferrous Ion by Potassium Dichromate method.*
9. *Determination of Flash and Fire point by using Pensky Marten's apparatus.*
10. *Determination of viscosity of oils through Redwood viscometer No.1.*
11. *Determination of viscosity of oils through Redwood viscometer No.2.*
12. *Determination of Eutectic temperature of Binary system (Urea-Benzoic acid).*
13. *Acid- Base titration by Conductometric method.*
14. *Redox titrations by Potentiometry.*
15. *Titration of Strong acid vs Strong base by Potentiometry.*

**Text Books:**

1. *Dr K. N. Jayaveera and K.B. Chandra Sekhar, Chemistry Pre-lab manual, S.M. Enterprises Ltd., 2007.*
2. *Vogel's Textbook of Quantitative Inorganic Analysis, ELBS Edition, 1994.*

**Equipment Required:**

1. *Glassware: Burettes, Pipettes, Standard Flasks, Beakers, Measuring jars, BOD bottles and Reagent bottles.*
2. *Analytical balance,*
3. *Reflux Condensers,*
4. *Pensky Marten's apparatus,*
5. *Redwood viscometer,*
6. *Bomb calorimeter,*
7. *Conductometer, Potentiometer.*

# SRI VENKATESWARA COLLEGE OF ENGINEERING AND TECHNOLOGY

(AUTONOMOUS)

**14ACS06 DATA STRUCTURES LAB**  
**(Common to CSE & IT)**  
**I B.Tech - II Semester (IT)**

**L T P C**  
**- - 3 2**

## Objectives:

The main objective of conducting this lab is to enable the students to:

1. Get practical knowledge of data structures learned in the class room.
2. Extend programming ability using a structured programming approach.
3. Build and manipulate linear and non-linear data structures, including stacks, queues, linked lists, trees and graphs
4. Choose the appropriate data structure to use in solving the typical computer science problems

## Lab Outcomes:

After Completing this lab the student must demonstrate the Knowledge and ability to:

1. Demonstrate the application of software engineering principles in design, coding, and testing of large programs.
2. Emphasize the specification of each data structure as an abstract data type before discussing implementations and application of the structure.
3. Aware of the importance of structured programming methods in developing the software.
4. Know the systematic approach to study algorithms , by focuses first on understanding the action of the algorithm then analyzing it

## Week 1

Write a C program that implements Stack operations using  
a) Arrays      b) Pointers

## Week 2

Write a C program that uses Stack operations to perform the following  
a) Converting Infix expression to Postfix expression.

b) Evaluating the Postfix expression.

## Week 3

Write a C program that implements Queue operations using  
a) Arrays      b) Pointers

## Week 4

Write a C program that implements Circular Queue operations using Arrays.

## Week 5

Write a C program that implements Dequeue operations using Arrays.



**Week 6**

Write a C program that uses functions to perform the following operations on singly linked list.

- i) Creation
- ii) Insertion
- iii) Deletion
- iv) Traversal

**Week 7**

Write a C program that uses functions to perform the following operations on doubly linked list.

- i) Creation
- ii) Insertion
- iii) Deletion
- iv) Traversal

**Week 8**

Write a C program that uses functions to perform the following operations on circular linked list.

- i) Creation
- ii) Insertion
- iii) Deletion
- iv) Traversal

**Week 9**

Write C programs that use both recursive and non recursive functions to perform the following searching operations for a Key value in a given list of integers:

- i) Linear search
- ii) Binary search

**Week 10**

Write a C program that implements the following sorting methods to sort a given list of integers in ascending order

- i) Bubble sort
- ii) Selection sort
- iii) Insertion sort

**Week 11**

Write a C program that implements the following sorting method to sort a given list of integers in ascending order:

- i) Merge sort
- ii) Quick sort

**Week 12**

Write a C program that uses functions to perform the following Binary Tree Traversals

- a) Inorder
- b) Preorder
- c) Postorder

**Week 13**

Write a C program to implement the following graph traversals

- a) Depth-First Search
- b) Breadth-First Search

**SRI VENKATESWARA COLLEGE OF ENGINEERING AND TECHNOLOGY  
(AUTONOMOUS)**

**II B.Tech - I Semester(IT)**

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<b>3</b>	<b>1</b>	<b>-</b>	<b>3</b>

**14AHS12      MANAGERIAL ECONOMICS AND FINANCIAL ANALYSIS  
(Common to All Branches)**

**OBJECTIVES:**

*The objective of this course is to make students to*

1. *Comprehend the fundamental concepts and theoretical principles of the Economics.*
2. *The course equips the students to develop an economic way of thinking in dealing with practical business problems and challenges.*
3. *Identify the basic economic events most common in business operations.*
4. *Also enable the students by providing the basic knowledge of book keeping, accounting and make analysis of financial statements of a business organization.*

**OUTCOMES:**

*After the completion of the course student will be able to*

1. *Gain knowledge on managerial economics.*
2. *Develop an understanding of economic principles and to enhance skills in high-level problem solving and critical thinking.*
3. *Evaluate the economic environment and the impact of governmental economic policies on consumers and financial institutions.*
4. *Know the application of financial accounting in the field of Engineering.*

**UNIT I**

**INTRODUCTION TO MANAGERIAL ECONOMICS**

Managerial Economics: Definition, Nature and Scope – Demand analysis: Law of demand, Demand determinants, Elasticity of Demand: Definition, Types, Measurement and Significance – Demand forecasting methods (Survey methods, Statistical methods, Expert opinion method, Test marketing, Controlled experiments, Judgmental approach).

**UNIT II**

**THEORY OF PRODUCTION AND COST ANALYSIS**

Production function – Cobb Douglas Production function – Laws of Returns – Internal and External economies of scale

**COST ANALYSIS:** Cost concepts, Fixed vs. Variable costs, Explicit vs. Implicit Costs, Out of Pocket costs Vs Imputed costs, Opportunity Cost and Sunk costs

**BREAK EVEN ANALYSIS:** Concept of Break Even Point (BEP) – Break Even Chart – Assumptions underlying and Practical significance of BEP (Simple Problems).

**UNIT III**

**INTRODUCTION TO MARKETS AND BUSINESS ORGANIZATIONS:**

Market structures – Types of Competition – Features of perfect competition, Monopoly, Monopolistic competition – Price-Output Determination under perfect competition and Monopoly – Types of Business organization – Features, Merits and demerits of Sole proprietorship, Partnership and Joint stock companies – Types of companies – Public enterprises –Types and Features – Changing business environment in post – Liberalization scenario.

**UNIT IV**

**CAPITAL AND CAPITAL BUDGETING:**

Capital and its Significance – Types of capital – Estimation of fixed and working capital requirements – Methods and sources of raising capital – Capital Budgeting Methods: Payback Method, Accounting Rate of Return (ARR), and Net Present Value (NPV) Method (Simple Problems).

## **UNIT V**

### **FINANCIAL ACCOUNTING AND FINANCIAL ANALYSIS THROUGH RATIOS:**

Double entry book keeping – Journal – Ledger – Trial Balance – Trading Account and balance sheet with simple adjustments

**Ratio analysis:** Computation of Liquidity Ratios (Current and Quick Ratio), Activity Ratios (Inventory Turnover Ratio and Debtor Turnover Ratio), Capital Structure Ratios (Debt- Equity Ratio and Interest Coverage Ratio) and Profitability Ratios (Gross Profit Ratio, Net Profit Ratio, Operating Ratio, P/E Ratio and EPS).

### **TEXT BOOKS:**

1. *Aryasri A. R. Managerial Economics and Financial Analysis: 4/E, TMH, 2009.*
2. *Varshney R.L. and K.L. Maheswari. Managerial Economics: Sultan Chand & Sons, 19/E, 2009.*
3. *Siddiqui S.A. and Siddiqui A.S., Managerial Economics and Financial Analysis: New Age international, 2009.*

### **REFERENCEBOOKS:**

1. *Gupta R.L. Financial Accounting: Volume I, Sultan Chand & Sons, New Delhi, 2001*
2. *James C. Van Horne. Financial Management policy: 12/E, PHI, 2001.*
3. *Joel Dean. Managerial Economics: PHI, 2001.*

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(AUTONOMOUS)**

**II B.Tech - I Semester(IT)**

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<b>3</b>	<b>1</b>	<b>-</b>	<b>3</b>

**14ACS07 COMPUTER ORGANIZATION**

**(Common to CSE & IT)**

**OBJECTIVES:**

*The objective of this course is to make students to*

- 1. Understand how computers are constructed out of a set of functional units and how the functional units operate, interact, and communicate.*
- 2. Understand the factors and trade-offs that affect computer performance To understand the concrete Representation of data at the machine level and how computations are performed at the machine level.*
- 3. Acquire the knowledge of computer organization and architecture (logical design) and relates this to contemporary design issues.*
- 4. Acquire the knowledge of machine level representation of data, assembly level organization, memory system organization and architecture, system connection, memory, input/output, instruction sets, CPU structure and functions and the control Unit operation.*

**OUTCOMES:**

*At the end of the course the student will be able to:*

- 1. Describe computer architecture and organization, computer arithmetic and CPU design.*
- 2. Understand the merits and pitfalls in computer performance measurements.*
- 3. Understand memory hierarchy and its impact on computer cost/ performance.*
- 4. Obtain technical knowhow of the advantage of instruction level parallelism and pipelining for high performance processor design.*

**UNIT I**

**STRUCTURE OF COMPUTERS:** Computer types, functional units, basic operational concepts, Von-Neumann architecture, bus structures, software, performance, multiprocessors and multicomputer, data representation, fixed and floating point and error detecting codes.

**UNIT II**

**REGISTER TRANSFER AND MICRO-OPERATIONS:** Register transfer language, register transfer, arithmetic micro-operations, logic micro-operations, shift micro-operations, arithmetic logic shift unit, computer registers, computer instructions, instruction cycle, instruction formats, addressing modes, data transfer and manipulation instructions.

**UNIT III**

**MICRO-PROGRAMMED CONTROL:** Control memory, address sequencing, micro-program example, and design of control unit.

**COMPUTER ARITHMETIC:** Addition and subtraction, multiplication and division algorithms, floating-point arithmetic operations.

**UNIT IV**

**THE MEMORY SYSTEM:** Basic concepts, semiconductor RAM, types of read - only memory (ROM), cache memory, virtual memory, secondary storage, RAID, direct memory access.

**INPUT/OUTPUT ORGANIZATION:** Accessing I/O Devices, Interrupts, Direct Memory Access, Modes of transfer, Peripheral devices.

**UNIT V**

**PIPELINING:** Basic Concepts, Parallel processing, Pipelining, Arithmetic pipelining, Instruction pipelining, RISC pipelining, Data Hazards, Instruction hazards, Vector processing, Array processors, Characteristics of multiprocessors, interconnection structures, inter processor communication and synchronization.

**TEXT BOOKS:**

1. M. Moris Mano.*Computer System Architecture*, 3<sup>rd</sup> edition, PHI, India, 2006
2. Carl Hamacher, ZvonksVranesic, SafeaZaky.*Computer Organization*, 5<sup>th</sup> edition, McGraw Hill, New Delhi, India,2002.

**REFERENCE BOOKS:**

1. William Stallings.*Computer Organization and Architecture- designing for performance*, 8<sup>th</sup> edition, Prentice Hall, New Jersey, 2010
2. Andrew S. Tanenbaum.*Structured Computer Organization*, 5<sup>th</sup> edition, Pearson Education Inc, New Jersey, 2006.
3. Sivarama P. Dandamudi.*Fundamentals of Computer Organization and Design*, Springer Int. Edition, USA, 2003.

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**(AUTONOMOUS)**

**II B.Tech - I Semester(IT)**

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<b>3</b>	<b>1</b>	<b>-</b>	<b>3</b>

**14ACS08      ADVANCED DATA STRUCTURES**

**(Common to CSE & IT)**

**OBJECTIVES:**

*The objective of this course is to make students to*

- 1. Gain knowledge in new and advanced data structures in C++.*
- 2. Be familiar with utilization of data structure techniques in problem solving.*
- 3. Have a comprehensive knowledge of data structures and algorithm.*
- 4. Carry out asymptotic analysis of algorithm.*

**OUTCOMES:**

*At the end of the subject, students will be able to:*

- 1. Understand the properties of various data structures*
- 2. Understand basic techniques of algorithm analysis*
- 3. Understand advanced abstract data type (ADT) and data structures and their Implementations*
- 4. Choose appropriate data structure as applied to specified problem definition.*

**UNIT I:**

The Origins of C++, What is Object Oriented Programming, some C++ fundamentals, C++ Class Overview-Class Definition, Objects, Class Members Access Control, Constructors and Destructors, Inline functions, this pointer, friend functions, Exception handling.

**UNIT II:**

Function Overloading, Operator Overloading, Generic Programming-Function and Class Templates, Inheritance basics, base and derived classes, inheritance types, base class access control, runtime polymorphism using virtual functions, abstract classes.

**UNIT III:**

Algorithms, performance analysis-Asymptotic notations-time complexity and space complexity. Review of basic data structures-List ADT- Linked Representation - Singly Linked List - Doubly linked List - Applications of lists-Stack ADT - Queue ADT - Implementation using template classes in C++.

**UNIT IV:**

Dictionaries-Operations and Implementations-Hashing - General Idea - Hash Function - Separate Chaining - Open Addressing - Linear Probing, quadratic probing- Priority Queues (Heaps) - Simple implementations - Binary Heap - Heap Sort.

**UNIT V:**

**Search trees:** Binary tree traversals-Binary search trees, Definition ADT, Implementation-AVL Trees, Implementation- Definition, Red-Black Trees and Splay Trees, B-Trees, Implementations, Comparison of Search Trees.

**Graphs:** Basic concepts, Graph Representation, Graph traversal (DFS & BFS)

**TEXT BOOKS:**

1. E Balaguruswamy. *Object oriented Programming with C++: TMH, 4<sup>th</sup> Ed, 2008.*
2. Sahani S. *Data structures Algorithms and Applications using C++:University Press (India) Pvt. Ltd,2<sup>nd</sup> edition,2004.*
3. Ananda Rao Akepogu, Radhika RajuPalagiri. *Data structures and Algorithms using C++: Pearson Education, 2010.*

**REFERENCE BOOKS:**

1. Adam Drozdek. *Data Structures and Algorithms in C++: India Edition, 3<sup>rd</sup> Edition,2004.*
2. GavPai. *Data Structures and Algorithms: McGraw Hill Education, 2008.*

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**II B.Tech - I Semester(IT)**

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**14AEC07 DIGITAL LOGIC DESIGN**

**(Common to CSE & IT)**

**OBJECTIVES:**

*The objective of the course is to*

1. Understand the fundamental concepts of digital design
2. Explain how digital circuit of large complexity can be built in a methodological way, starting from Boolean logic and applying a set of rigorous techniques.
3. Create minimal realizations of single and multiple output Boolean functions.
4. Design and analyze combinational circuits using medium scale integrated (MSI) components, including arithmetic logic units.

**OUTCOMES:**

*On successful completion of this course students will be able to*

1. Interpret, convert and represent different number systems and binary arithmetic.
2. Design and analyze combinational and sequential circuits for various practical problems using basic gates and flip flops
3. Implement LSI and MSI circuits using programmable logic devices (PLDs).
4. Design different types of counters.

**UNIT I**

**BINARY SYSTEMS:** Digital Systems, Binary Numbers, Number base conversions, Octal and Hexadecimal Numbers, complements, Signed binary numbers, Binary codes, Binary Storage and Registers and Binary logic.

**BOOLEAN ALGEBRA AND LOGIC GATES :** 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 and Integrated circuits.

**UNIT II**

**GATE – LEVEL MINIMIZATION:** The map method, Four-variable map, Five-Variable map, product of sums simplification, Don't-care conditions, NAND and NOR implementation, other Two-level implementations and Exclusive-OR function.

**UNIT III**

**COMBINATIONAL LOGIC :** Combinational Circuits, Analysis procedure, Design procedure, Binary Adder and Subtractor, Decimal Adder, Binary multiplier, magnitude comparator, Decoders, Encoders and Multiplexers.

**UNIT IV**

**SYNCHRONOUS SEQUENTIAL LOGIC:** Sequential circuits, Latches, Flip-Flops, Analysis of clocked sequential circuits, State Reduction and Assignment, Design Procedure.

**REGISTERS AND COUNTERS:**

Shift Registers, Ripple counters, synchronous counters and Design of modulo-N Counters, Ring and Johnson Counters.

**UNIT – V**

**MEMORIES:**

Random-Access Memory, Memory Decoding, Error Detection and correction, Read-Only Memory, Programmable Logic Array(PLA), Programmable Array Logic(PAL), Sequential Programmable Devices.



**TEXT BOOKS :**

1. M.Morris Mano and Michael D.Ciletti. *Digital Design*: Fourth Edition, Pearson Education, 2009.
2. Charles Roth. *Fundamentals of Logic Design*: 5<sup>th</sup> Edition, Thomson, 2008.

**REFERENCE BOOKS :**

1. Zvi. Kohavi. *Switching and Finite Automata Theory*: Tata McGraw Hill, 2002.
2. C.V.S. Rao. *Switching Theory and Logic Design*: Pearson Education, 2004.
3. Donald D.Givone. *Digital Principles and Design*: Tata McGraw Hill, 2001.

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**II B.Tech - I Semester(IT)**

<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
<b>3</b>	<b>1</b>	<b>-</b>	<b>3</b>

**14ACS09 DISCRETE MATHEMATICS**

**(Common to CSE & IT)**

**OBJECTIVES:**

*The objective of this course is to make students to:*

5. Introduce various Mathematical techniques for representation and manipulation of the data in the real world.
6. Get familiar and understand the fundamental notions in discrete mathematics.
7. Understand and demonstrate the basic concept of an algorithm and its application in combinational mathematics.
8. Identify the basic properties of graphs and trees and model simple applications.

**OUTCOMES:**

*At the end of the course the student will be able to:*

5. Distinguish between the notion of discrete and continuous mathematical structures.
6. Apply Propositional logic and first order logic to solve problems.
3. Understand discrete mathematical structures.
4. Formulate and solve graph problems and count discrete event occurrences.

**UNIT I**

**Mathematical Logic:** Statements and Notations, Connectives, Well Formed Formulas, Truth Tables, Tautology, Equivalence Implication, Normal Forms, Quantifiers, Universal Quantifiers.

**Predicates:** Predicative Logic, Free & Bound Variables, Rules of Inference, Consistency, Proof of Contradiction, Automatic Theorem Proving.

**UNIT II**

**Relations:** Properties of Binary Relations, Equivalence, Transitive Closure, Compatibility and Partial Ordering Relations, Lattices, Hasse Diagram. **Functions:** Inverse Function, Composition of Functions, Recursive Functions, Lattice and its Properties.

**UNIT III**

**Algebraic structures:** Algebraic Systems- Examples and general properties, Semi groups and Monoids, Groups, Sub Groups, Cyclic Groups, Cosets, Permutation Groups, Quotient Groups, Rings and Fields, Homomorphism, Isomorphism.

**Elementary Combinatorics:** Basis of Counting, Enumerating Combinations & Permutations, with Repetitions, Constrained Repetitions, Binomial Coefficients, Binomial Multinomial Theorems, Peano's Axioms, The Principles of Inclusion – Exclusion. Pigeon hole principle and its Applications.

**UNIT IV**

**Recurrence Relations :** Generating Functions and Sequences, Calculating Coefficient of Generating Function, Recurrence Relations, Solving Recurrence Relation by Substitution and Generating functions, Repertoire Method, Perturbation Method, Convolutions, Characteristics Roots, Solution of Inhomogeneous Recurrence Relation.

**UNIT V**

**Graph Theory and Applications:** Representation of Graph, DFS, BFS, Spanning Trees, Planar Graphs, Cycles, Paths and Connectedness, Vertex and Edge cuts, Basic Concepts Isomorphism and Sub graphs, Multi graphs and Euler Circuits, Hamiltonian Graphs, Chromatic Numbers.

**TEXT BOOKS:**

1. J.P.Tremblay,R.Manohar. *Discrete Mathematical Structures with Applications to Computer Science:TMH, 1<sup>st</sup> edition, 1997, Tata McGraw Hill Publishing Company Ltd.*
2. C L Liu, D P Mohapatra. *Elements of Discrete Mathematics- A Computer Oriented Approach: Fourth Edition, Tata McGraw Hill, 2012.*
3. J.L. Mott, T.P.Baker, A. Kandel, *Discrete Mathematics for Computer Scientists & Mathematicians, 2<sup>nd</sup> Edition, PHI, 1999.*

**REFERENCEBOOKS :**

1. Ralph, P.Grimaldi. *Discrete and Combinational Mathematics - An Applied Introduction: 5th Edition – Pearson Education, 2014.*
- 2.D.S.Chandrasekharaiah. *Discrete Mathematical structures:Prism Books, 2005.*

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**II B.Tech - I Semester(IT)**

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<b>3</b>	<b>1</b>	<b>-</b>	<b>3</b>

**14AEC01 ELECTRONIC DEVICES AND CIRCUITS  
(Common to CSE & IT)**

**OBJECTIVES:**

1. To understand operation of various Electronic devices such as Diodes, BJT, JFET and MOSFET.
2. To understand various applications of diode and special purpose electronic devices.
3. To understand the design of various biasing and amplifier circuits of BJT and JFET.

**OUTCOMES:**

1. Students will get working knowledge of various Semiconductor Devices like Diode, BJT, JFET, MOSFET, SCR & UJT.
2. Design and analyze the DC bias circuitry of BJT and FET.
3. Design and analyze basic transistor amplifier circuits using BJT and FET.

**UNIT I**

**PN JUNCTION DIODE AND ITS APPLICATIONS:**

PN Junction Characteristics, biasing- band diagrams and current flow, Diode current equations under forward bias and reverse bias conditions, Junction breakdown in diodes and breakdown voltages, effect of temperature on diode characteristics, Junction capacitance under forward bias and reverse bias, V-I characteristics and Specifications of Zener Diode, simple Zener voltage regulator and its limitation. Half wave, Full wave and Bridge rectifiers - their operation, performance characteristics, various filters and their importance and analysis of C-filter.

**UNIT II**

**BIPOLAR JUNCTION TRANSISTOR:**

Construction, Principle of Operation, V-I characteristics, Current components and current flow in BJT, Modes of transistor operation, Early effect, BJT input and output characteristics in CB, CE CC configuration, Various BJT biasing techniques, Thermal runaway and Thermal Stabilization, Stability factors, Bias stabilization and Compensation techniques.

**UNIT III**

**SMALL SIGNAL TRANSISTORS EQUIVALENT CIRCUITS:** Small signal low frequency h-parameter model of BJT, Determination of h-Parameters from Transistor Characteristics, Measurement of h-Parameters, Analysis of CE, CB and CC configurations using exact h-parameters, Comparison of CB, CE and CC amplifier configurations.

**UNIT IV**

**JUNCTION FIELD EFFECT TRANSISTORS (JFET):** JFET Construction, Operation & Current flow, Pinch-off voltage, V-I characteristics of JFET. Various biasing circuits for JFET. Low frequency small signal model of JFET. Analysis of CS amplifier.

**MOSFETs:** MOSFET Construction, Operation & Current flow, V-I characteristics of MOSFET in Enhancement and Depletion modes.

**UNIT V**

**SPECIAL PURPOSE ELECTRONIC DEVICES:**

Principle of Operation, and Characteristics of Tunnel Diode, Varactor Diode, Schottky Barrier Diode, Silicon Control Rectifier (SCR), Uni-Junction Transistor (UJT), Semiconductor photo devices - LDR, LED, Photo diodes & Photo transistors.

**TEXT BOOKS:**

1. J. Millman & Christos C. Halkias. *Integrated Electronics*: TMGH Edition, 2008.
2. R.L. Boylestad and Louis Nashelsky. *Electronic Devices and Circuits*: Pearson/Prentice Hall, 10<sup>th</sup> Edition, 2009.
3. David A. Bell. *Electronic Devices and Circuits*: 5<sup>th</sup> edition, Oxford University Press, 2008.

**REFERENCE BOOKS:**

1. T.F. Bogart Jr., J.S. Beasley and G. Rico. *Electronic Devices and Circuits: Pearson Education, 6<sup>th</sup> edition, 2008.*
2. J. Millman, C.C. Halkias, and Satyabratha Jit, *Millman's. Electronic Devices and Circuits: Tata McGraw Hill, 2<sup>nd</sup> Edition, 2008.*

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(AUTONOMOUS)**

**II B.Tech - I Semester(IT)**

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**14AEC02 ELECTRONIC DEVICES AND CIRCUITS LAB  
(Common to CSE & IT)**

**OBJECTIVES:**

1. To understand the working of diode, transistors and other special purpose electronics devices.
2. To understand the working of a rectifier circuit with and without filters.
3. To understand the bandwidth calculations of an amplifier circuit.

**OUTCOMES:**

At the end of the course, the student should be able to:

1. Analyze CE, CB and CS amplifiers and its bandwidth calculation.
2. Calculate various parameters from the characteristics of various electronic devices.
3. Know the importance of Filters and its calculations.

**Electronic Workshop Practice:**

1. Identification, Specifications, Testing of R, L, C Components (Colour Codes), Potentiometers, Coils, Gang Condensers, Relays, Bread Boards.
2. Identification, Specifications and Testing of active devices, Diodes, BJTs, JFETs, LEDs, LCDs, SCR, UJT.
3. Soldering Practice- Simple circuits using active and passive components.
4. Study and operation of Ammeters, Voltmeters, Transformers, Analog and Digital Multimeter, Function Generator, Regulated Power Supply and CRO.

**List of Experiments  
(For Laboratory Examination-Minimum of Twelve Experiments)**

1. Study of CRO Operation and its Applications.
2. P-N Junction Diode Characteristics  
Part A: Germanium Diode (Forward bias & Reverse bias)  
Part B: Silicon Diode (Forward bias only)
3. Zener Diode Characteristics  
Part A: V-I Characteristics  
Part B: Zener Diode act as a Voltage Regulator
4. Rectifiers (without and with c-filter)  
Part A: Half-wave Rectifier  
Part B: Full-wave Rectifier
5. BJT Characteristics (CE Configuration)  
Part A: Input Characteristics  
Part B: Output Characteristics
6. BJT Characteristics (CB Configuration)  
Part A: Input Characteristics  
Part B: Output Characteristics
7. FET Characteristics (CS Configuration)  
Part A: Drain (Output) Characteristics  
Part B: Transfer Characteristics
8. SCR Characteristics.
9. UJT Characteristics.

10. LDR Characteristics.
11. LED Characteristics.
12. Transistor Biasing.
13. Frequency response of Common Emitter amplifier.
14. Frequency response of Common Collector amplifier.
15. *Frequency response of Common Source amplifier.*

**Equipment required for Laboratory:**

1. Regulated Power Supplies.
2. Analog/Digital Storage Oscilloscopes.
3. Analog/Digital Function Generators.
4. Digital Multimeter.
5. Decade Résistance Boxes/Rheostats.
6. Decade Capacitance Boxes.
7. Ammeters (Analog or Digital).
8. Voltmeters (Analog or Digital).
9. Active & Passive Electronic Components.
10. Bread Boards.
11. Connecting Wires.
12. *CRO Probes etc.*

**14ACS10 ADVANCED DATA STRUCTURES LAB**

**(Common to CSE & IT)**

**Week 1-**

- a) Given that an Employee class contains following members:Data members:Employee number,Employee name,Basic, DA, IT, Net salary and print data members. Write a C++ program to read the data of N employees and compute net salary of each employee (DA=52% of Basic and Income Tax(IT)=30% of the gross salary).
- b) Define a STUDENT class with USN, Name and Marks in 3 tests of subjects. Declare an array of 10 student's objects. Using appropriate functions print USN, Name and the average of marks of the all students.

**Week 2-**

- a) Write a C++ program illustrating Constructor overloading(Both parameterized and default).
- b) Write a C++ program illustrating Inheritance (Multiple, Multilevel Hybrid).

**Week 3-** Write C++ programs to implement the following using an array.

- a) Stack ADT
- b) Queue ADT

**Week 4-**Write C++ programs to implement the following using a singly linked list.

- a) Stack ADT
- b) Queue ADT

**Week 5-** Write C++ programs to implement the dequeue (double ended queue) ADT Using a doubly linked list and an array.

**Week 6-** Write C++ programs for implementing the following sorting methods:

- a) Merge sort
- b) Heap sort

**Week 7-** Write C++ programs that use non-recursive functions to traverse the given binary tree

- a) Preorder
- b) In order and c) Post order

**Week 8-** Write C++ program to perform the following operations

- a) Insert an element into a binary search tree.
- b) Delete an element from a binary search tree.
- c) Search for a key element in a binary search tree.

**Week 9-**Write C++ program to perform the following operations

- a) Insertion into a B-Tree
- b) Deletion from B-Tree

**Week 10-**Write C++ program to perform the following operations

- a) Insertion into an AVL-tree
- b) Deletion from an AVL-tree

**Week 11-**Write C++ program to implement all the functions of a Dictionary (ADT) using Hashing.

**Week 12-** Write C++ programs for the implementation of bfs and dfs for a given graph.



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(AUTONOMOUS)**

**II B.Tech II Semester(IT)**

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**14AHS10 PROBABILITY AND STATISTICS  
(Common to CSE, IT & AUT)**

**OBJECTIVES:**

*The objective of this course is to make students to*

1. *To revise elementary concepts and techniques*
2. *To formalize the knowledge of theory of probability, random variables, probability distributions and different techniques of statistical methodologies.*
3. *To know the different estimations and hypothesis concerning proportions.*
4. *To apply the above concepts to data analysis.*

**OUTCOMES:**

*After completion of the course the student will be able to*

1. *The student is able to sample the data and analyse it.*
2. *Able to optimize a function with two or more variables.*
3. *Student is able to apply suitable tests and evaluate the acceptance of the hypothesis.*
4. *The student is able to apply different estimations and hypothesis to solve the problems*

**UNIT I**

**PROBABILITY AND RANDOM VARIABLES:** Sample space and events – Probability - The axioms of probability – Addition theorem of Probability – Conditional probability – Baye’s theorem. Discrete and Continuous random variables – Mean and Variance.

**UNIT II**

**DISTRIBUTIONS AND SAMPLING THEORY:** Distribution Functions – Binomial, Poisson and Normal Distributions.

**SAMPLING DISTRIBUTIONS** Populations and Samples – Sampling distributions of mean.

**UNIT III**

**ESTIMATION & TESTING OF HYPOTHESIS**

Populations and Samples – Point Estimation – Interval estimation – Bayesian estimation. Type I error and Type II errors, One tail, two tail tests - Hypothesis concerning one and two means Hypothesis concerning one and two proportions.

**UNIT IV**

**TESTING OF SIGNIFICANCE (SMALL SAMPLES)**

Student- t-test, F-test, Chi-square [ $\chi^2$ ] test:  $\chi^2$  test goodness of fit – the analysis of RxC tables, ANOVA – I way and II way classification.

**UNIT V**

**QUALITY CONTROL & QUEUEING THEORY:** Introduction to Quality Control, Construction of  $\bar{X}$ , Range chart, C chart and P charts. Pure Birth and Death process- M/M/1 Model – Problems on M/M/1 Model.

**TEXT BOOKS:**

1. Iyengar. T.K.V., Krishna Gandhi B. *Probability & Statistics*: New Delhi, S.Chand&Company, 2012.
2. S.C.Gupta and Kapoor. *A text book of Probability and Statistics*: Sultan Chand publications, New Delhi.

## REFERENCE BOOKS :

1. Miller and John Freund. E.*Probability & Statistics for Engineers*:New Delhi, Pearson Education,2004
2. J. L. Devore.*Probability and Statistics for engineering and sciences*, 8th edition, Ceneage Learning, (2011).
3. R.E. Walpole, R.H. Mayers, S.L. Mayers and K. Ye.*Probability and Statistics forengineers and scientists*, 8th Edition, Pearson Education (2007).

**SRI VENKATESWARA COLLEGE OF ENGINEERING AND TECHNOLOGY  
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**II B.Tech – II Semester(IT)**

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**14ACS11 OPERATING SYSTEMS  
(common to CSE & IT)**

**OBJECTIVES:**

*The objective of this course is to make students to*

1. *Develop an understanding of basic operating system concepts.*
2. *Gain an understanding of how an operating system manages concurrency.*
3. *Design and solve synchronization problems*
4. *Develop a knowledge of modern operating system practice*

**OUTCOMES:**

*At the end of the course students will be able to*

1. *Understand basic operating system concepts: computer and operating system structures, process management, storagemanagement, protection.*
2. *Understand the fundamental elements of thread and process concurrency.*
3. *Solve the deadlock problems that are faced by operating system during the execution.*
4. *Relate modern industrial-strength operating system design and implementation to general operating system concepts*

**UNIT I**

**INTRODUCTION**

What Operating Systems Do, Operating System Structure, Operating System Operations, and Overview of Process Management, Memory Management, Storage Management, Protection and Security.

**System Structures-** Operating System Services, User Operating System Interface, System Calls, Operating System Structure, Virtual machines.

**UNIT II**

**Process Management**

Process Management Process Concepts, Process Scheduling, Operations on Processes, Inter process Communication, Examples of IPC Systems, Multithreading Models, Process Scheduling-Basic concepts, Scheduling Criteria, Scheduling Algorithms, Synchronization-Background, The Critical-Section Problem, Peterson's Solution, Semaphores, Monitors.

**UNIT III**

**Memory Management**

Background, Swapping, Contiguous Memory Allocation, Paging, Structure of the Page table, Segmentation.

**Virtual Memory Management**

Background, Demand paging, Page Replacement, Allocation of Frames, Thrashing.

**UNIT IV**

**Storage Management:**

File System- File Concepts, Access Methods, Directory and Disk Structure, Implementation of file System Structure- file system Structure, file-system Implementation, Directory Implementation, Allocation Methods, Free-Space Management.

**Secondary Storage Structure-**Overview of Mass-Storage Structure, Disk Structure, DiskScheduling, RAID Structure Tertiary Storage Structure,STREAMS,performance.

**UNIT V**

**Deadlocks**

System Models, Deadlock Characterization, Methods for Handling Deadlocks, Deadlock Prevention, Deadlock Avoidance –Bankers Algorithm, Deadlock Detection, Recovery from Deadlock.

**Protection and Security**

Goals of Protection, Domain of Protection, Access Matrix, Implementation of Access Matrix, Access Control, Revocation of access rights, System Security-The Security problem, System and Network Threats.

**TEXT BOOK:**

Silberschatz and Galvin.*Operating System Concepts*, 8th edition, WILEY INDIA, 2008.

**REFERENCE BOOKS:**

1. Gagne. *Operating System Concepts:6th Edition*, John Wiley & Sons, Inc publishers, 2003.
2. Tanenbaum.*Modern Operating System*: Pearson Education, 2000.

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**II B. Tech - II Semester(IT)**

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**14AIT01 PARADIGMS OF PROGRAMMING**

**OBJECTIVES:**

*The objective of this course is to make students to:*

1. *Choose appropriate programming languages for certain classes of programming problems*
2. *Understand the significance of an implementation of a programming language in compiler of Interpreter*
3. *Increase the ability to learn new programming languages.*
4. *To introduce semantics of programming languages and develop skills in describing,analyzingand using the features of programming languages.*

**OUTCOMES:**

*At the end of the course the student will be able to:*

1. *Be exposed to using logic languages.*
2. *Be familiar with design issues of object-oriented languages*
3. *Obtains the knowledge regarding to functional languages.*
4. *Student will be able to understand the compilation and interpretation of different programming languages*

**UNIT I**

Introduction to different paradigms of programming -Imperative - Object Oriented - Functional - Logic

**UNITII**

Imperative and Object-oriented Programming - Role of Types - Static and Dynamic Type Checking - Scope rules ; Grouping Data and operations, Information Hiding and Abstract Data Types,Objects,Inheritance,Polymorphism,Templates.

**UNIT III**

Functional Programming - Expressions and Lists, Evaluation, types, type systems, values and operations, function declarations, lexical scope, lists and programming with lists.

**UNITIV**

Polymorphic functions, higher order and Curried functions, abstract data types.

**UNIT V**

Logic Programming - Review of predicate logic, clausal-form logic, logic as a programming language, Unification algorithm, Abstract interpreter for logic programs, Semantics of logic programs, Programming in Prolog.

**TEXT BOOK:**

Ravi Sethi.*Programming Languages: Concepts and Constructs*: 2nd Edition, Pearson Education Asia.

**REFERENCE BOOKS:**

1. Alfred. V. Aho and Jefferey. D. Ullman.*Foundations of Computer Science*: Computer Science Press, C Edition, Feb 1992.
2. Stephen G. Kochan.*Programming in C*: Third Edition, Pearson Education, July 2004.
3. R. B. Patel.*Programming in C*: 1st edition - Khanna Book Publishing Company Pvt. Ltd, New Delhi, 2008.

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**II B.Tech - II Semester(IT)**

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**14ACS13 DESIGN AND ANALYSIS OF ALGORITHMS**

**(Common to CSE & IT)**

**OBJECTIVES:**

*The objective of this course is to make students to:*

1. *Introduce various mathematical techniques for representation and manipulation of the data in the real world.*
2. *Expose to a variety of techniques for designing and analyzing algorithms*
3. *Understand how the worst-case time complexity of an algorithm is defined.*
4. *Formulate the time order analysis for an algorithm & to prove the correctness of an algorithm*

**OUTCOMES:**

*At the end of the course the student will be able to:*

1. *Analyze time and space complexity*
2. *Identify algorithm design methodology to solve problems.*
3. *Design algorithms for network flows*
4. *Distinguish between P and NP classes of problems*

**UNIT I**

**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.

**Divide and conquer:** General method, applications-Binary search, Quick sort, Merge sort, Strassen's matrix multiplication.

**UNIT II**

**Greedy method:** General method, applications-Job sequencing with deadlines, 0/1 knapsack problem, Minimum cost spanning trees, Single source shortest path problem.

**UNIT III**

**Dynamic Programming:** General method, applications-Matrix chain multiplication, 0/1 knapsack problem, All pairs shortest path problem, Travelling salesperson problem, Reliability design.

**UNIT IV**

**Graph Searching and Traversal:** Overview, Traversal methods (depth first and breadth first search), Applications of DFS – connected components, Bi-connected components.

**Backtracking:** General method, applications-n-queen problem, graph coloring, Hamiltonian cycles.

**UNIT V**

**Branch and Bound:** General method, applications - Travelling salesperson problem, 0/1 knapsack problem- LC Branch and Bound solution, FIFO Branch and Bound solution.

**NP-Hard and NP-Complete problems:** Basic concepts, non-deterministic algorithms, NP - Hard and NP Complete classes.

**TEXT BOOK:**

E. Horowitz, S. Sahni and S. Rajsekran. *Fundamentals of Computer Algorithms*: Galgotia Publication, 2008.

**REFERENCE BOOKS:**

1. T. H. Cormen, Leiserson, Rivest and Stein. *Introduction of Computer Algorithm*: PHI, 2010.
2. SaraBasse, A.V. Gelder. *Computer Algorithms*: Addison Wesley, 2010.

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(AUTONOMOUS)**

**II B. Tech - II Semester (IT)**

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**14AIT02 DATA COMMUNICATION AND NETWORKING**

**OBJECTIVES:**

*To expose the students to the basic principles of the technology of data communications and networking and the main objective of this course is to make students to have a good working knowledge of communication technology in*

1. Network components
2. Transmission links and link control
3. Protocols and network topologies
4. Error detection and correction

**OUTCOMES:**

*Upon successful completion of this course, the students will be able to:*

1. Describe the hardware and software commonly used in data communications and networking.
2. Define the functions of the seven layers of the OSI reference model.
3. Explain the functions of the major components in a network.
4. Explain the ways of network interconnections.

**Unit I**

Introduction to Data Communication, Network, Protocols & standards and standards organizations - Line Configuration - Topology - Transmission mode - Classification of Network - OSI Model - Layers of OS1 Model.

**Unit II**

Parallel and Serial Transmission - DTE/DCE/such as EIA-449, EIA-530, EIA-202 and x.21 interface - Interface standards - Modems - Guided Media - Unguided Media - Performance - Types of Error - Error Detection - Error Corrections.

**UnitIII**

Multiplexing - Types of Multiplexing - Multiplexing Application - Telephone system - Project 802 - Ethernet - Token Bus - Token Ring - FDDI - IEEE 802.6 - SMDS - Circuit Switching - Packet Switching - Message switching - Connection Oriented and Connectionless services.

**Unit IV**

History of Analog and Digital Network - Access to ISDN - ISDN Layers - Broadband ISDN - X.25 Layers - Packet Layer Protocol - ATM - ATM Topology - ATM Protocol.

**Unit V**

Repeaters - Bridges - Routers - Gateway - Routing algorithms - TCP/IP Network, Transport and Application Layers of TCP/IP - World Wide Web.

**TEXT BOOK:**

Behrouz and Forouzan.*Introduction to Data Communication and Networking: 2<sup>nd</sup> Edition*  
-  
TMH, 2001

**REFERENCE BOOK:**

Jean Wairand, Communication Networks (A first Course): Second Edition - WCB/McGraw Hill, 1998.



**SRI VENKATESWARA COLLEGE OF ENGINEERING AND TECHNOLOGY  
(AUTONOMOUS)**

**II B.Tech - II Semester(IT)**

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**14ACS15 DATABASE MANAGEMENT SYSTEMS**

**(Common to CSE & IT)**

**OBJECTIVES:**

*The objective of this course is to make students to:*

1. *Understand the importance of DBMS and explain how DBMS is better than traditional File Processing Systems and analyze the basic structure of Database and recognize the different views of the database.*
2. *Draw and Investigate Data Flow and Entity Relationship Diagrams. & analyze and use Relational Data Model, while comparing with other data models.*
3. *Formulate data retrieval queries in SQL and the Relational Algebra and Calculus.& Describe the semantics of a SQL query in set-theoretic terms.*
4. *Understand terms like Deadlocks, Transaction Processing and Concurrency Control.*

**OUTCOMES:**

*At the end of the course the student will be able to:*

1. *Understand functional components of the DBMS.*
2. *Acquire Capability of maintenance of huge amounts of data along with reducing of redundancy in data.*
3. *Design data base schema, Develop E-R Model, Evaluate and optimize queries.*

*Understand transaction processing, concurrency control and recovery techniques.*

**UNIT I**

**INTRODUCTION:**History of database systems- Database system applications - Database system vs file systems - Purpose of Database System – Describing and storing data in a DBMS- Structure of a DBMS.

**ENTITY-RELATIONSHIP MODEL (E-R MODEL):** E-R Diagrams-Features of ER Model-conceptual Database design with the ER model-conceptual design for large enterprises.

**UNIT II**

**RELATIONAL MODEL:**Introduction to relational model - Integrity constraints -Querying relational data-Logical Database design- Introduction to views- Destroying/Altering Tables and views-Relational Algebra - Relational Calculus.

**SQL:**The form of a basic SQL query-Union, Intersect and Except operators-Nested queries-Aggregate operators-Null values-Complex integrity constraints in SQL-Triggers and active databases-Designing active databases- Embedded SQL-Triggers – Cursors-Procedures-Functions in PL/SQL.

**UNIT III**

**SCHEMA REFINEMENT AND NORMAL FORMS:**Introduction to schema refinement-Functional Dependencies – reasoning about FDs-Normal Forms: 1NF,2NF,3NF,Boyce-Codd Normal Form-Properties of decompositions-Multi-valued Dependencies and Fourth Normal Form – Join Dependencies and Fifth Normal Form.

**UNIT IV**

**TRANSACTIONS:**Transaction Concepts – Transaction state- Implementation of Atomicity and Durability-concurrent executions– Implementation of Isolation-Serializability- Recoverability.

**CONCURRENCY:**Concurrency control: Lock based protocols- Time stamp based protocols- Validation based protocols-Multiple granularity-Deadlock handling.

**UNIT V**

**STORAGE AND FILE STRUCTURE:**Overview of Physical Storage Media- Magnetic Disks-RAID-Tertiary storage-Storage Access -File Organization –Organization of Records in Files.

**INDEXING AND HASHING:**Ordered Indices- B+ Tree Index Files- B- Tree Index Files-Multiple Key Access- Static Hashing- Dynamic Hashing- Comparison of Ordered Indexing and Hashing- Bitmap Indices.

**TEXT BOOKS:**

1. RaguramaKrishnan, JohannesGehrke. *Data base Management Systems*: TATAMcGraw-Hill, 3<sup>rd</sup> Edition, 2007.
2. Abraham Silberschatz, Henry F. Korth, S. Sudharshan. *Database System Concepts*: Fifth Edition, Tata McGraw Hill, 2006.

**REFERENCE BOOKS:**

1. Peter Rob, Carlos Coronel. *Database Systems Design Implementation and Management*: 7th edition, 2009.
2. S.K. Singh. *Database Systems Concepts, Design and Applications*: First edition, Pearson Education, 2006.
3. Ramez Elmasri, Shamkant B. Navathe. *Fundamentals of Database Systems*: Fourth Edition, Pearson / Addison Wesley, 2007.

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**II B. Tech - II Semester (IT)**

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**14AIT03      OPERATING SYSTEM LAB**

1. Study of UNIX OS
2. Basic UNIX Commands
3. Study Of vi Editor & Shell Programming
  - a. To get the input and display the academic, personal details.
  - b. To check whether the given number is odd or even.
  - c. To perform all the arithmetic operations using case statements.
  - d. To generate a Fibonacci series of first n numbers
4. Write programs using the following system calls of UNIX operating system:  
fork, exec, getpid, exit, wait, close, stat, opendir, readdir
5. File management system calls: Write a program to implement
  - a. create a file
  - b. Copy one file to another
  - c. Linking a file
  - d. Delete a file.
6. Directory management system calls: Write a program to change directory and print its contents.
7. Parent process – Child process Relationship.
8. Implementing IPC using pipes.
9. Simulation of scheduling algorithms: Write a program to implement the following process scheduling algorithms
  - a. First Come First Serve
  - b. Shortest Remaining Job First
  - c. Round Robin
  - d. Priority Scheduling
10. Implementation of semaphore: Write a program that demonstrates how two processes can share a variable using semaphore.
11. Implementation of shell: Write a 'c' program to implement a shell.
12. Producer – Consumer Problem :  
Write a program to implement producer consumer problem (Using POSIX semaphores)
13. To implement Banker's algorithm for a multiple resources.
14. Dining Philosophers problem.

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**II B.Tech -II Semester(IT)**

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**14ACS17 DATABASE MANAGEMENT SYSTEMS LAB  
(Common to CSE & IT)**

**OBJECTIVES:**

*The objective of this course is to make students to:*

1. Understand, appreciate and effectively explain the underlying concepts of database technologies
2. Design and implement a database schema for a given problem-domain.
3. Populate and query a database using SQL DML/DDI commands.
4. Understand the concepts of Triggers

**OUTCOMES:**

*At the end of the course the student will be able to:*

1. Create, Modify, and manipulate the data database objects.
2. Retrieving the data from the database server.
3. Performing database operations in a procedural manner using pl/sql
4. Develop Programs using BEFORE and AFTER Triggers.

1. Creation, altering and dropping of tables and inserting rows into a table (use constraints while creating tables) examples using SELECT command.
2. Queries (along with sub Queries) using ANY, ALL, IN, EXISTS, NOT EXISTS, UNION, INTERSECT, Constraints. Example:- Select the roll number and name of the student who secured fourth rank in the class.
3. Using Aggregate functions (COUNT, SUM, AVG, MAX and MIN), GROUP BY, HAVING and Creation and dropping of Views.
4. 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)
5. i) Creation of simple PL/SQL program which includes declaration section, executable section and exception –Handling section (Ex. Student marks can be selected from the table and printed for those who secured first class and an exception can be raised if no records were found)  
ii) Insert data into student table and use COMMIT, ROLLBACK and SAVEPOINT in PL/SQL block.
6. Develop a program that includes the features NESTED IF, CASE and CASE expression.
7. Program development using WHILE LOOPS, numeric FOR LOOPS, nested loops using ERROR Handling, BUILT-IN Exceptions, USE defined Exceptions.
8. Program development using a creation of procedures, passing parameters IN and OUT of PROCEDURES.
9. Program development using the creation of stored functions, invoke functions in SQL Statements and write complex functions.
10. Program development using creation of package specification, package bodies, private objects, package variables and cursors and calling stored packages.
11. Develop programs using features parameters in a CURSOR, FOR UPDATE CURSOR, WHERE CURRENT of clause and CURSOR variables.
12. Develop Programs using BEFORE and AFTER Triggers, Row and Statement Triggers and INSTEAD OF Triggers.

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**II B.Tech II Semester(IT)**

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**14AHS15 QUANTITATIVE APTITUDE AND REASONING – I  
(Audit Course)(Common to All Branches)**

**Objectives:**

*The main objectives of this course are*

1. To learn the concepts of coding and decoding of letters and numbers.
2. To interpretation data using the graphs.
3. To understand the basic concepts of probability.
4. To Comprehend the relation between time and distance in real life problems.

**Outcomes:**

*After completion of the course the student will be able to*

1. Strengthen their ability to meet the challenges in solving Time and distance problems.
2. Apply Data interpretation to solve the problems on Line, Bar, Pie graphs.
3. Develop the thinking ability and apply Venn diagram and binary logic.
4. Apply the number series and letter analogies in problems on verbal analogy

**Syllabus for Quantitative Aptitude**

**Competency 1:**

**1.1 Numbers**

Classification of numbers - Divisibility rules - Finding the units digit - Finding remainders in divisions involving higher powers -LCM and HCF Models.

**1.2 Decimal Fractions**

**1.3 Simplification**

**1.4 Square Roots & Cube Roots**

**1.5 Average**

Definition of Average - Rules of Average - Problems on Average - Problems on Weighted Average - Finding Average using assumed mean method.

**1.6 Problems on Numbers**

**1.7 Problems on Ages**

**1.8 Surds & Indices**

**1.9 Percentage**

Introduction - Converting a percentage into decimals - Converting a Decimal into a percentage - Percentage equivalent of fractions - Problems on Percentages

**1.10 Profit And Loss & True Discount**

Problems on Profit and Loss percentage - Relation between Cost Price and Selling price - Discount and Marked Price –Two different articles sold at same

Cost Price - Two different articles sold at same Selling Price -Gain% / Loss% on Selling.

**1.11 Ratio and proportion**

Definition of Ratio - Properties of Ratios - Comparison of Ratios - Problems on

Ratios - Compound Ratio - Problems on Proportion, Mean proportional and Continued Proportion .

## Competency 2:

### 2.1 **Partnership**

Introduction-Relation between capitals, Period of Investments and Shares

### 2.2 **Chain Rule**

### 2.3 **Time & work**

Problems on Unitary method - Relation between Men, Days, Hours and Work -

Problems on Man-Day-Hours method - Problems on alternate days - Problems on Pipes and Cisterns .

### 2.4 **Time & Distance**

Relation between speed, distance and time - Converting kmph into m/s and

vice versa - Problems on average speed -Problems on relative speed -

Problems on trains -Problems on boats and streams - Problems on circular tracks - Problemson races .

### 2.5 **Mixtures and Allegations**

Problems on mixtures - Allegation rule - Problems on Allegation

### 2.6 **Simple Interest**

Definitions - Problems on interest and amount - Problems when rate of interest and time period are numerically equal.

### 2.7 **Compound Interest**

Definition and formula for amount in compound interest - Difference between

simple interest and compound interest for 2 years on the same principle and time period.

### 2.8 **Logarithms**

## Syllabus For Reasoning

## Competency 3:

### 3.1 **Cubes**

Basics of a cube - Formulae for finding volume and surface area of a cube - Finding the minimum number of cuts when the number of identical pieces are given - Finding the maximum number of pieces when cuts are given - Problems on painted cubes of same and different colors - Problems on cuboids - Problems on painted cuboids - Problems on diagonal cuts

### 3.2 **Venn diagrams**

Representing the given data in the form of a Venn diagram -Problems on Venn diagrams with two sets - Problems on Venn diagrams with three sets

-

Problems on Venn diagrams with four sets

### 3.3 **Binary Logic**

Definition of a truth-teller - Definition of a liar - Definition of an alternator

-

Solving problems using method of assumptions - Solving analytical puzzles using binary logic .

## Competency 4:

### a. **Number and letter series**

Difference series - Product series - Squares series - Cubes series - Alternate series - Combination series - Miscellaneous series - Place values of letters.

b. **Number and Letter Analogies**

Definition of Analogy -Problems on number analogy -Problems on letter analogy - Problems on verbal analogy .

**Odd man out**

Problems on number Odd man out -Problems on letter Odd man out - Problems on verbal Odd man out .

**Competency 5:**

**5.1 Coding and decoding**

Coding using same set of letters - Coding using different set of letters - Coding into a number - Problems on R-model .

**5.2 Direction sense**

Solving problems by drawing the paths-Finding the net distance travelled

-

Finding the direction - Problems on clocks - Problems on shadows - Problems on damaged compass - Problems on direction sense using symbols and notations

**5.3 Critical Reasoning**

Problems on assumption - Problems on conclusions -Problems on inferences -

Problems on strengthening and weakening of arguments - Problems on principle-Problems on paradox

**5.4 Lateral reasoning puzzle**

Problems on common balance -Problems on digital balance -Problems on coins -Problems on lockers -Problems on heights -Digit puzzles using basic arithmetic operations .

**Text Books:**

1. GL Barrons. *Thorpe's Verbal reasoning: LSAT Materials*, TataMcGraw Hills.
2. R S Agarwal. *A Modern approach to Logical reasoning: S chand Company Ltd 2002.*

**Reference Books:**

1. AbhjitGuha. *Quantitative Aptitude: Tata McGraw Hills, 4<sup>th</sup> Edition, 2011.*
2. R S Agarwal. *Quantitative Aptitude: S.Chand Company Ltd 2008.*
3. G.L BARRONS. *Quantitative Aptitude: Tata McGraw Hills.*

**Sri Venkateswara College of Engineering and Technology (Autonomous)  
Chittoor**

**14AIT04      AUTOMATA & COMPILER DESIGN**

**III B. Tech - I Semester (IT)**

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**OBJECTIVES:**

The objective of this course is to make students to:

1. Acquire knowledge about the theory of finite automata, as the first step towards learning advanced topics, such as compiler design.
2. Articulate the fundamental principles in compiler design and to provide the skills needed for building compilers for various situations that one may encounter in a career in Information Technology.
3. Enable to develop software solutions to real-time problems by applying optimization techniques.
4. Understand the phases of compilation.
5. Analyze the issues in design of Code generation.

**UNIT-I Compiler, Formal Language, Regular Expressions**

Introduction, Phases of Compiler, Specification of Token, Languages, Definition Languages regular expressions, Finite Automata – DFA, NFA, Conversion of regular expression to NFA, NFA to DFA.

**UNIT-II Context Free Grammars and Grammar Parsing**

Context free grammars, derivation, parse trees, ambiguity LL (K) grammars and LL (1) parsing.

Bottom up parsing handle pruning LR Grammar Parsing, LALR parsing, parsing ambiguous grammars, YACC programming specification.

**UNIT-III Semantics, Run Time Storage Management**

Syntax directed translation, S-attributed and L-attributed grammars, Chomsky hierarchy of languages and recognizers, Type checking, type conversions, equivalence of type expressions, overloading of functions and operations. Storage organization, storage allocation strategies, scope access to non-local names, parameter passing, language facilities for dynamic storage allocation.

**UNIT-IV Intermediate Code Generation**

Intermediate code – abstract syntax tree, translation of simple statements and control flow statements, Backpatching, procedure calls.

**UNIT-V Code Optimization and Code Generation**

Principal sources of optimization, optimization of basic blocks, peephole optimization, flow graphs, Data flow analysis of flow graphs. Machine dependent code generation, Issues in the design of code generation, object code forms, generic code generation algorithm, Register allocation and assignment. DAG representation of Basic Blocks.



## OUTCOMES:

At the end of the course the student will be able to:

1. Acquire knowledge to represent the different programming language constructs(keywords, expressions, statement) in the machine understandable language by using the basic tools(REs, Automata) of automata theory.
2. Use the formal attributed grammars for specifying the syntax and semantics of programming language constructs.
3. Perform type checking on the given programming language construct and choose the appropriate storage allocation technique.
4. Analyze various intermediate forms of source programs.
5. Apply the code optimization techniques in the generation of code for a given real time problem.

## TEXT BOOK:

Compilers Principles, Techniques and Tools, Alfred V.Aho and Jeffrey D.Ullman, Ravi sethi, Pearson Education.

## REFERENCEBOOKS:

1. Modern Compiler Construction in C, Andrew W. Appel., Cambridge University Press.
2. Theory of Computation, S. Balakrishnan and V.D. Ambeth Kumar, ACME Learning Publisher, New Delhi.
3. Principles of Compiler Design 3rd Edition, Balakrishnan S, Sai Publishers.

## Mapping of Cos with POs:

Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	✓											
CO2								✓			✓	
CO3					✓							
CO4			✓				✓				✓	
CO5		✓		✓					✓			

# Sri Venkateswara College of Engineering and Technology (Autonomous)

## Chittoor

### 14ACS20 COMPUTER GRAPHICS

(Common to CSE & IT)

III B.Tech I Semester (IT)

L T P C

3 1 - 3

#### Objectives:

The objective of this course is to make students to:

1. Analyze basic concepts and applications of Computer graphics
2. Understand the design of algorithms for generating geometric shapes.
3. Understand the 2D and 3D geometric transformations.
4. Understand the operations like viewing and clipping in both 2d and 3d coordination system.
5. Understand and demonstrate computer graphics animations.

#### UNIT I

**Introduction:** Basic concepts, Application areas of Computer Graphics, overview of graphics systems - video-display devices, raster-scan systems, random scan systems, input devices and their logical classifications, Graphics software.

#### UNIT II

**Output primitives:** Points and lines, line drawing algorithms – DDA, Bresenham's, mid-point circle and ellipse algorithms, Filled area primitives - Scan line polygon fill algorithm, inside-outside tests, boundary-fill and flood-fill algorithms.

#### UNIT III

**2-D geometrical transforms:** Translation, scaling, rotation, reflection and shear transformations, matrix representations and homogeneous coordinates, composite transforms, transformations between coordinate systems.

**2-D viewing:** The viewing pipeline,, window to view- port coordinate transformation, viewing functions, Cohen-Sutherland line clipping algorithms, Sutherland –Hodgeman polygon clipping algorithm.

#### UNIT IV:

**Three Dimensional Concepts:** 3-D object representation: Polygon surfaces, Curved lines and surfaces, quadric surfaces, spline representation, Bezier curve and surfaces.

**3-D Geometric transformations:** Translation, rotation, scaling, reflection and shear transformations, composite transformations.

#### UNIT V

**3-D Viewing:** Viewing pipeline, viewing coordinates, projections, clipping.

**Computer animation:** Design of animation sequence, general computer animation functions, raster animation, computer animation languages, key frame systems, motion specifications.

**Outcomes:**

At the end of the course the student will be able to:

1. Demonstrate different computer graphics applications.
2. Design algorithms to render different geometric shapes like line, circle, and ellipse.
3. Perform transformations (rotation, scaling, translation, and shearing) on geometric 2D and 3D objects.
4. Compare different 2D, 3D viewing and clipping techniques.
5. Implement animation technique using micro and media flash.

**TEXT BOOKS:**

1. *Computer Graphics C version*, 2<sup>nd</sup> edition, Donald Hearn and M. Pauline Baker, Pearson Education, 1997.
2. *“Computer Graphics Principles & practice”*, second edition in C, Foley, VanDam, Feiner and Hughes, Pearson Education, 1995.

**REFERENCEBOOKS:**

1. *“Computer Graphics”*, Steven Harrington TMH, 1983
2. *“Computer Graphics Second edition”*, Zhigandxiang, Roy Plastock, Schaum’s outlines, Tata Mc- Graw hill edition, 2000.

*Mapping Course Outcomes with Programme outcomes*

Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1											✓	
CO2	✓	✓										
CO3	✓				✓							
CO4									✓			
CO5											✓	

**Sri Venkateswara College of Engineering and Technology (Autonomous)  
Chittoor**

**14AIT05 REAL TIME COMPUTING AND COMMUNICATION**

**III B. Tech - I Semester (IT)**

**L T P C  
3 1 - 3**

**OBJECTIVES:**

The objective of this course is to make students to:

1. Understand both primary and advanced topics in real-time systems and networks.
2. Analyze and Differentiate Different Real-time task scheduling algorithms
3. Examine Real-Time communication and networking.
4. Understand Internet protocols and services.
5. Understand the different traffic model in Real Time Networks

**UNIT - I**

**Introduction:**Real-time systems, Applications of real time systems, a basic model of real time system, Characteristics, safety and reliability,Types of real time tasks,Timing Constraints and modeling timing constraints.

**Real-Time task Scheduling:**Types of real time tasks and their characteristics, Task Scheduling, Clock Driven scheduling, Hybrid Schedulers, Event – Driven Scheduling, EDF Scheduling.

**UNIT - II**

**Handling Resource Sharing and Dependencies Among Real Time**

**Tasks:**Resource sharing among real time tasks, Priority Inversion, Priority Inheritance Protocol. Highest locker Protocols, priority Ceiling Protocol, Different types of priority inversions under PCP, some issues in using Resource sharing protocol, Handling task Dependencies.

**UNIT – III**

**Multiprocessor Real – Time System:**Multiprocessor scheduling results; Multi processor anomalies; Static and dynamic scheduling; Fault Tolerant Scheduling; Resource Reclaiming.

**UNIT - IV**

**Distributed Real-Time System:**Scheduling in Distributed Real – Time Systems; Global scheduling (information, transfer, selection, and location policies); Scheduling of object – based tasks in real time systems; Message scheduling.

**UNIT - V**

**Real-time Networks:**Wide area networks; Traffic models; QoS requirements; Real-time channels; Routing and multicasting; real-time MAC protocols; real – time LAN protocols; DCR Based protocols for multi packet messages; Real time communication with periodic and aperiodic messages.

## OUT COMES:

After completion of this course the students would be able to

1. Identify the principle multi-tasking techniques in real time systems.
2. Understand multi task scheduling algorithms.
3. Evaluate the performance of soft and hard real time systems.
4. Develop real time operating systems.
5. Design a routing mechanism in Real Time Networks

## TEXT BOOKS:

1. Resource Management in Real-time Systems and Networks, Siva Ram Murthy, G. Manimaran, CMIT Press, March 2001.
2. Real-Time Systems, Theory and Practice, Rajib Mall, Pearson Education, 2007.

## REFERENCEBOOKS:

1. Real-Time Systems, C. M. Krishna, K. G. Shin, McGraw Hill, reprinted 2004.
2. Real-Time Systems Design & Analysis 3<sup>rd</sup> Edition, P.A Laplante, Willey, 2004.
3. Real-time Systems 6<sup>th</sup> impression, J. W. S. Liu, Pearson Education, 2008.

## Mapping of Cos with POs:

Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1						✓						
CO2						✓						
CO3									✓			
CO4	✓											
CO5			✓									

# Sri Venkateswara College of Engineering and Technology (Autonomous)

## Chittoor

### 14AEC22 MICROPROCESSORS AND INTERFACING

(Common to CSE & IT)

III B.Tech I Semester (IT)

L T P C

3 1 - 3

#### Objectives:

The course will provide the student:

1. To familiarize the architecture of 8086 processor.
2. To know Assembly language programming and interfacing with various peripherals.
3. To understand salient features of advanced processors.
4. To provide the knowledge of 8051 microcontroller concepts, architecture.
5. To learn Assembly language programming of 8051.

#### UNIT-I:

##### 8086 MICROPROCESSOR

History of Microprocessors, Memory Segmentation, 8086 Microprocessor: Architecture, special functions of general purpose registers, flag register and functions of flags, addressing modes and instruction set of 8086.

##### ASSEMBLY LANGUAGE PROGRAMING

Assembler directives, procedures and macros. Assembly language programs (8086) for addition, subtraction, multiplication, division, sorting, searching, Evaluation of arithmetic expressions.

#### UNIT-II:

##### INTERFACING MEMORY AND DMA CONTROLLER

Pin diagram of 8086-Minimum mode and maximum mode of operation. Timing diagram. Memory Interfacing to 8086 (Static RAM & EPROM). Need for DMA. DMA data transfer Method and 8257 DMA Controller.

##### INTERFACING I/O PORTS AND APPLICATIONS

Keyboard display controller (8279) and interfacing to 8086, PPI 8255 – various modes of operation and interfacing to 8086, Stepper Motor interfacing.

#### UNIT-III

**INTERRUPTS:** Interrupt structure of 8086. Vector interrupt table. Interrupt service routines. Introduction to DOS and BIOS interrupts. 8259 PIC Architecture and interfacing cascading of interrupt controller and its importance.

**SERIAL DATA TRANSFER:** Asynchronous and Synchronous Serial Data Transfer schemes. 8251 USART architecture.

**UNIT-IV ADVANCED MICROPROCESSORS:** Introduction to 80286, Salient Features of 80386, Real and Protected Mode Segmentation & Paging, Salient Features of Pentium, Branch Prediction and Overview of RISC Processors.

#### UNIT-V:

## 8051 MICROCONTROLLER:

8051 Microcontroller Architecture, Register set of 8051, Memory organization, Addressing modes and Instruction set, simple programs. Interrupt Structure of 8051, Timer modes, Serial Port Operation.

### Outcomes:

After completion of this course the student will be able to:

1. Study and understand the architecture and programming of any other microprocessor or microcontroller.
2. Know how to interface various peripherals.
3. Able to understand the special features of latest microprocessors.
4. Do any type of VLSI, Embedded systems, Industrial and real time application.
5. Know how to use the built- in devices of 8051 Microcontroller in any application.

### TEXT BOOKS:

1. *Advanced Microprocessor and Peripherals*, A.K.Ray and K.M.Bhurchandi, TMH, 2000.
2. *Micro Controllers*, Deshmukh, Tata McGraw Hill Edition,2005.

### REFERENCES:

1. *Micro Processors & Interfacing*, Douglas V. Hall, 2007.
2. *The 8088 and 8086 Micro Processors* Walter,A.Triebel&Avtar Singh, 4<sup>th</sup> Edition – PHI, 2003.
3. *Micro Computer System 8086/8088 Family Architecture, Programming and Design*, Liu and G.A. Gibson, 2<sup>nd</sup> Edition, PHI, 1987.

COURSES OUTCOMES	PROGRAM OUTCOMES											
	1	2	3	4	5	6	7	8	9	10	11	12
CO-1	✓	✓			✓				✓			✓
CO-2		✓	✓		✓							
CO-3					✓							
CO-4	✓							✓			✓	
CO-5		✓	✓									

**Sri Venkateswara College of Engineering and Technology (Autonomous)  
Chittoor**

**14ACS21 SOFTWARE ENGINEERING  
(Common to CSE & IT)**

**III B.Tech I Semester (IT)**

**L T P C  
3 1 - 3**

**Objectives:**

The objective of this course is to make students to:

1. Comprehend Software engineering principles, functional and nonfunctional, user and system requirements.
3. Implement user interface design & testing strategies.
4. Demonstrate principles of product metrics and process metrics.
5. Analyze the risk management and quality management.

**UNIT I**

**INTRODUCTION TO SOFTWARE ENGINEERING:** The evolving role of software, software Myths. A Generic View of Process: Software Engineering-A layered Technology, A process framework, The Capability Maturity Model Integration (CMMI). Process Models: The waterfall model, Incremental process model, Evolutionary process models, The Unified process.

**SOFTWARE REQUIREMENTS:** Functional and non-functional requirements, user requirements, system requirements, Interface specification, the software requirements document.

**UNIT-II**

**REQUIREMENTS ENGINEERING PROCESS:** Requirements Engineering Tasks, Feasibility studies, Requirements elicitation and analysis, Requirements validation, Requirements management. System Models: Context models, Behavioral models, Data models, Object models, structured methods.

**DESIGN ENGINEERING:** Design process and Design quality, Design Concepts, The Design Model.

**CREATING AN ARCHITECTURAL DESIGN:** Software Architecture, Data Design, Architectural Styles and patterns.

**UNIT-III**

**PERFORMING USER INTERFACE DESIGN:** The Golden Rules, User Interface Analysis and Design, Design Evolution.

**TESTING STRATEGIES:** A strategic Approach to Software Testing, Test strategies for conventional software, Black-Box and White Box Testing, Validation Testing, System Testing.

**UNIT –IV**

**PRODUCT METRICS:** Software Quality, Metrics for Analysis Model, Metrics for Design Model, Metrics for Source Code, Metrics for Testing, Metrics for Maintenance.

**METRICS FOR PROCESS AND PROJECTS:** Software Measurement, Metrics for Software Quality.



## UNIT-V

**RISK MANAGEMENT:** Software Risks, Risk Identification, Risk Projection, Risk Refinement, RMMM, RMMM plan.

**QUALITY MANAGEMENT:** Quality concepts, Software Quality Assurance, Software Reviews, Formal Technical Reviews, Statistical software quality assurance, The ISO 9000 quality standards.

### Outcomes:

Successful completion of this course, students should be able to

1. Identify and evaluate the scope and necessity of software engineering and life cycle models
2. Apply requirement and design engineering concepts.
3. Design the product and process metrics in software quality towards application in software projects.
4. Identify the necessity of risk management in software quality assurance.

### Text Books:

1. *Software Engineering-A practitioner's Approach*, 6<sup>th</sup> Edition, Roger S. Pressman, . Mc Graw Hill International Edition, 2005.
2. *Software Engineering*, 7<sup>th</sup> edition, Sommerville, Pearson education, 2004.

### Reference Books:

1. *Software Engineering*, K.K. Agarwal & Yogesh Singh, New Age International Publishers.
2. *Software Engineering an Engineering approach*, James F. Peters, Witold Pedrycz, , 1999.
3. *Software Engineering principles and practice*, Waman S Jawadekar, The McGraw-Hill companies, 2004.

Mapping Course Outcomes with Programme outcomes

Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1					✓							
CO2					✓				✓			
CO3		✓	✓									
CO4		✓	✓									
CO5					✓				✓			

**Sri Venkateswara College of Engineering and Technology (Autonomous)  
Chittoor**

**14ACS34 ARTIFICIAL INTELLIGENCE & EXPERT SYSTEMS**

**III B.Tech-I Semester (IT)**

**L T P C  
3 1 - 3**

**Objectives:**

The objective of this course is to make students to:

1. Understand the concepts of AI and Intelligent Agents.
2. Explore Problem solving using search techniques in AI.
3. Understand Logical Agents and First-Order logic.
4. Explore knowledge Representation issues.
5. Understand concepts of learning from examples.

**UNIT – I**

**Introduction:** What Is AI, the Foundations of Artificial Intelligence, The History of Artificial Intelligence, The State of the Art

**Intelligent Agents:** Agents and Environments, Good Behavior: The Concept of Rationality, The Nature of Environments, And The Structure of Agents

**UNIT – II**

**Solving Problems by Searching:** Problem-Solving Agents, Uninformed Search Strategies, Informed (Heuristic) Search Strategies, Heuristic Functions

**Beyond Classical Search:** Local Search Algorithms and Optimization Problems, Searching with Nondeterministic Actions and Partial Observations, Online Search Agents and Unknown Environments

**Constraint Satisfaction Problems:** Definition, Constraint Propagation, Backtracking Search, Local Search, The Structure of Problems

**UNIT – III**

**Logical Agents:** Knowledge-Based Agents, Propositional Logic, Propositional Theorem Proving, Effective Propositional Model Checking, Agents Based on Propositional Logic

**First-Order Logic:** Syntax and Semantics, Knowledge Engineering in FOL, Inference in First-Order Logic, Unification and Lifting, Forward Chaining, Backward Chaining, Resolution

**UNIT – IV**

**Planning:** Definition, Algorithms, Planning Graphs, Hierarchical Planning, Multiagent Planning

**Knowledge Representation:** Ontological Engineering, Categories and Objects, Events, Mental Events and Mental Objects, Reasoning Systems for Categories, Reasoning with Default Information, The Internet Shopping World

**UNIT – V**

**Learning from Examples:** Forms of Learning, Supervised Learning, Learning Decision Trees, Evaluating and Choosing the Best Hypothesis, The Theory of Learning, Regression and Classification with Linear Models, Artificial Neural Networks.

**Expert Systems Architectures:** Introduction, Rule Based System Architecture, Non-Production System Architecture, Dealing with uncertainty, Knowledge Acquisition and Validation, Knowledge System Building Tools.

**Outcomes:**

At the end of the course, students should be able to:

1. Understand foundation and basic concepts of AI and Intelligent Agents.
2. Evaluate Searching techniques for problem solving in AI.
3. Apply First-order Logic and chaining techniques for problem solving.
4. Handle knowledge representation techniques for problem solving.
5. Apply supervised learning and Neural Networks for solving problem in AI.

**TEXT BOOK:**

1. Artificial Intelligence: A Modern Approach, 3rd edition, Pearson, Russel S, Norvig P, Education, 2010.
2. Introduction to Artificial Intelligence and Expert Systems, Dan W. Patterson ,PHI, New Delhi, 2006.

**REFERENCE BOOKS:**

1. Artificial Intelligence, 3rd edition, Rich E, Knight K, Nair S B, Tata McGraw-Hill, 2009.
2. Artificial Intelligence: Structures and Strategies for Complex problem solving, 6th edition, Luger George F, Pearson Education, 2009
3. Minds and Computers An Introduction to the Philosophy of Artificial Intelligence, Carter M,Edinburgh University Press, 2007.

Mapping Course Outcomes with Programme outcomes

Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1										✓		
CO2									✓			
CO3											✓	
CO4			✓									
CO5							✓					

# Sri Venkateswara College of Engineering and Technology (Autonomous)

## Chittoor

### 14AEC25 MICROPROCESSORS AND INTERFACING LAB (Common to CSE & IT)

III B.Tech I Semester (IT)

L T P C  
- - 4 2

#### Objectives:

The course will provide the student:

1. To become skilled in 8086 Assembly Language Programming.
2. To provide the knowledge of interfacing with various peripherals.
3. To write programs for using keyboard display controller.
4. To learn 8051 Microcontroller Assembly Language Programming.
5. To learn about built-in timer of 8051 Microcontroller.

*Minimum **Ten** Experiments to be conducted  
(Minimum **Eight** from Part A and **Two** from Part B)*

#### Part A

##### MICROPROCESSORS:

1. ALPs (8086) for addition and subtraction.
2. ALPs (8086) for multiplication and Division.
3. ALPs (8086) for sorting and searching.
4. ALPs(8086) to evaluate arithmetic expressions
5. Logic operations–Shift and rotate–Converting packed BCD to unpacked BCD, BCD to ASCII conversion.
6. String operations – Move block, reverse string, string comparison, Length of string.
7. ALPs (8086) for (i) DOS interrupts (ii) BIOS interrupts
8. ALPs (8086) for square wave and rectangular wave generation using 8255 in I/O mode and BSR mode.
9. Key Board Display Controller (8279)-Write a small program to display a string of characters.
10. Serial communication implementation using USART (8251).
11. Interrupt Controller (8259)-ALP using interrupt request pins of 8259.
12. ALP (8086) for stepper motor control.

#### Part B

##### MICRO CONTROLLERS:

1. ALP (8051) to determine the largest and smallest of N bytes.
2. (a) ALP (8051) to multiply a 16-bit number by an 8-bit number.  
(b) ALP (8051) to find square root of an 8-bit number.
3. (a) ALP (8051) to determine LCM of two 8- bit numbers.  
(b) ALP (8051) to determine GCD of two 8- bit numbers.
4. Timer/Counters (8051) in different modes.

**Outcomes:**

At the end of the course, student will be

1. Able to write 8086 Assembly Language Programs.
2. Able to use different peripheral devices.
3. Able to use keyboard display controller.
4. Able to write 8051 Assembly Language Programs.
5. Able to use the built in devices of 8051 Microcontroller in any application.

*Mapping Course Outcomes with Programme outcomes*

Courses Outcomes	PROGRAM OUTCOMES											
	1	2	3	4	5	6	7	8	9	10	11	12
CO-1	✓	✓								✓		
CO-2			✓									
CO-3		✓	✓									
CO-4	✓	✓										
CO-5		✓	✓									

**Sri Venkateswara College of Engineering and Technology (Autonomous)  
Chittoor**

**14ACS23      COMPUTER GRAPHICS & COMPILER DESIGN LAB  
(Common to CSE & IT)**

**III B.Tech I Semester (IT)**

**L T P C  
- - 4 2**

**Objectives:**

The course will make the student to

1. Understand various computer graphics algorithms
2. Learn the implementation techniques for basic graphical models
3. Comprehend the working of phases of compiler
4. Understand and operate compiler construction tools
5. Learn the usage of both windows and Unix related features.

**PART-A**

1. Write a program to draw a line using a midpoint Bresenham algorithm.
2. Write a program to draw a line using a the DDA algorithm.
3. Write a program to draw a Circle using the Bresenham algorithm.
4. Write a program to draw a Ellipse using a midpoint ellipse algorithm.
5. Implement 2D transformations.
6. Implement Cohen-Sutherland 2D Clipping and window view port mapping.
7. Implement translation, scaling, using 3D transformations.
8. Write a program to draw a hut using simple graphics functions.
9. Write a program to fill a polygon.

**PART-B**

1. Design a Lexical analyzer for the given language. The lexical analyzer should ignore redundant spaces, tabs and newlines. It should also ignore comments. Although the syntax specification states that identifiers can be arbitrarily long, you may restrict the length to some reasonable value.
2. Implement the lexical analyzer using JLex, flex or lex or other lexical analyzer generating tools.
3. Design Predictive parser for the given language
4. Design LALR bottom up parser for the given language.
5. Convert the BNF rules into YACC form and write code to generate an abstract syntax tree.

## Outcomes:

At the end the students will be able to

1. Demonstrate the graphical models with suitable algorithms
2. Implement graphics related programs in C language
3. Demonstrate the working of compiler at various stages
4. Demonstrate the working nature of compiler tools.
5. Evaluate the distinction between various platforms and tools.

### *Mapping Course Outcomes with Programme outcomes*

Course outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	P10	P11	P12
CO1	✓	✓			✓							
CO2			✓					✓				
CO3		✓	✓						✓			
CO4		✓			✓			✓				
CO5						✓					✓	

**Sri Venkateswara College of Engineering and Technology (Autonomous)  
Chittoor**

**14AHS16 QUANTITATIVE APTITUDE AND REASONING – II**  
(Audit Course)

III B.Tech I Semester (IT)

**L T P C**  
**3 - - -**

**OBJECTIVES:**

The main objectives of this course are

1. To evaluate various real life situations by resorting to analysis of key issues and factors.
2. To understand various languages structures.
3. To demonstrate different principles involved in solving mathematical problems and thereby reducing the time taken for performing job functions.
4. To explore the possibilities of utilization of concepts of reasoning.
5. To interpret the given data graphically.

**Syllabus for Quantitative Aptitude**

**Competency 1:**

1. **Area**
  - *Formulas for Areas*
  - *Problems on Areas*
2. **Volumes & Surface Areas**
  - *Problems on Volumes*
  - *Problems on Surface Areas*
3. **Races & Games of Skill**
4. **Calendars**
  - *Definition of a Leap Year*
  - *Finding the number of Odd days*
  - *Framing the year code for centuries*
  - *Finding the day of any random calendar date*
5. **Clocks**
  - *Finding the angle when the time is given*
  - *Finding the time when the angle is known*
  - *Relation between Angle, Minutes and Hours*
  - *Exceptional cases in clocks*
6. **Stocks & Shares**
7. **Permutation and Combinations**
  - *Definition of permutation*
  - *Problems on Permutations*



- *Definition of Combinations*
- *Problems on Combinations*

## **Competency 2:**

- 8. Probability**
  - *Definition of Probability*
  - *Problems on coins*
  - *Problems on dice*
  - *Problems on Deck of cards*
  - *Problems on Years*
- 9. True Discount**
- 10. Banker's Discount**
- 11. Heights & Distances**
- 12. Odd man out & Series**
  - *Problems on number Odd man out*
  - *Problems on letter Odd man out*
  - *Problems on verbal Odd man out*
- 13. Data Interpretation**
  - *Problems on tabular form*
  - *Problems on Line Graphs*
  - *Problems on Bar Graphs*
  - *Problems on Pie Charts*

## **Syllabus for Reasoning**

### **Competency 3:**

#### **Deductions**

- *Finding the conclusions using Venn diagram method*
- *Finding the conclusions using syllogism method*

#### **Connectives**

- Definition of a simple statement
- Definition of compound statement
- Finding the Implications for compound statements
- Finding the Negations for compound statements

### **Competency 4:**

#### **Analytical Reasoning puzzles**

- Problems on Linear arrangement
- Problems on Circular arrangement
- Problems on Double line-up

- Problems on Selections
- Problems on Comparisons

## **Competency 5:**

### **Blood relations**

- Defining the various relations among the members of a family
- Solving Blood Relation puzzles
- Solving the problems on Blood Relations using symbols and notations

### **Outcomes:**

After completion of the course the student will be able to

1. Strengthen their ability to meet the challenges in solving real life problems.
2. The student will preserve maturity of the mind in solving linguistic problems.
3. Develop the thinking ability and apply Quadratic equations.
4. Apply the Analytical Reasoning puzzles to solve linear and circular arrangements
5. Analyze the blood relation puzzles in a family tree.

### **Text Books:**

1. Thorpe's Verbal reasoning, LSAT Materials GL Barrons, TataMcGraw Hills,.
2. A Modern approach to Logical reasoning, R S Agarwal, Schand Company Ltd 2002.

### **Reference Books:**

1. 'Quantitative Aptitude' 4<sup>th</sup> Edition. AbhjitGuhaTata McGraw Hills, 2011.
2. 'Quantitative Aptitude' R S Agarwal, Chand Company Ltd 2008.
3. 'Quantitative Aptitude' G.L BARRONS, Tata McGraw Hills.

**Sri Venkateswara College of Engineering and Technology (Autonomous)  
Chittoor**

**14AHS13 TECHNICAL ENGLISH-II  
(Common to EEE, ECE, CSE & IT)**

**III B.Tech II Semester (IT)**

**L T P C  
3 1 - 3**

**Preamble:**

English is an international language as well as a living and vibrant one. People have found that knowledge of English is a passport for better career and for communication with the entire world. As it is a language of opportunities in this global age, English is bound to expand its domain of use everywhere. The syllabus has been designed to enhance communications skills of the students of Engineering and Technology. The prescribed book serves the purpose of preparing them for everyday communication and to face global competitions in future.

The prescribed text focuses on LSRW skills and vocabulary development. The teachers should encourage the students to use the target language. The classes should be interactive and student-centered. They should be encouraged to participate in the classroom activities keenly.

**Objectives:**

1. To enable the students to communicate in English for academic and social purpose.
2. To make the students to master LSRW skills to meet the challenges in the society.
3. To strengthen the students to have good command of English Language and thereby to have good command of subject.
4. To develop the skills in students for societal service and the love for work.
5. To make the students to be humane.

**UNIT – I**

**Chapter entitled ‘Humour’ from “Using English”**

Listening - Techniques - Importance of phonetics

L- Meet & Greet and Leave taking, Introducing Oneself and Others (Formal and Informal situations)

R- Reading Strategies -Skimming and Scanning W- Writing strategies- sentence structures

G-Parts of Speech –Noun-number, pronoun-personal pronoun, verb- analysis V-Affixes- prefix and suffix, root words, derivatives

**UNIT –II**

**Chapter entitled ‘Inspiration’ from “Using English”**

L- Listening to details

S- Apologizing, Interrupting, Requesting and Making polite conversations R- Note making strategies

Paragraph-types- topic sentences, unity, coherence, length, linking devices G-Auxiliary verbs and question tags

synonyms-antonyms, homonyms, homophones, homographs, words often confused

### **UNIT –III**

#### **Chapter entitled ‘Sustainable Development’ from “Using English”**

L- Listening to themes and note taking

S- Giving instructions and Directions, making suggestions, Accepting ideas, fixing a time and Advising

R- Reading for details -1

W- Resume and cover letter

G- Tenses – Present tense, Past tense and Future tense V-Word formation and One-Word Substitutes

### **UNIT –IV**

#### **Chapter entitled ‘Relationships’ from “Using English”**

L- Listening to news

S- Narrating stories, Expressing ideas and opinions and telephone skills R- Reading for specific details and Information

Technical Report writing-strategies, formats-types-technical report writing G- Voice and Subject – Verb Agreement

Idioms and prepositional Phrases

### **UNIT –V**

#### **Chapter entitled ‘Science and Humanism’ from “Using English”**

L- Listening to speeches

S- Making Presentations and Group Discussions R- Reading for Information

W- E-mail drafting

G- Conditional clauses and conjunctions

Collocations and Technical Vocabulary and using words appropriately

Remedial Grammar:

Adjectives and Adverbs.

Use of Articles.

Review of prepositions and conjunctions.

Transformation of sentences

Active and Positive Voice.

Synthesis and analysis.

(C) Direct and indirect speech.

Common errors in English.

Vocabulary:

Synonyms and antonyms.

One word substitutions.

Phrasal verbs and idioms.

Commonly confused words

Verbal ability.

Writing practice (composition):

Essay writing

Report writing  
 Resume writing  
 Creative writing  
 Letter writing

**Outcomes:**

The students will enrich their communication skills both in academic and social arena.

The students will master LSRW skills.

The students will become proficient in English language and make use of it to be good in his subject.

The students will cultivate skills for societal service and inculcate passion for work.

The students will understand the human values of life and work.

**Text Book:**

“Using English; A Course book for Undergraduate Learners” published by Orient Black Swan, 2013.

**Reference Books:**

Raymond Murphy’s English Grammar with CD, Murphy, Cambridge University Press, 2012.

English Conversation Practice –Grant Taylor, Tata McGraw Hill, 2009.

Communication SKILLS, Sanjay Kumar & Pushpalatha Oxford University Press, 2012.

A Course in Communication Skills- Kiranmai Dutt & co. Foundation Books, 2012.

MAPPING OF COs WITH POs:

Course Outcomes	PROGRAMME OUTCOMES											
	1	2	3	4	5	6	7	8	9	10	11	12
CO1			✓	✓		✓	✓	✓	✓	✓	✓	✓
CO2			✓	✓		✓	✓	✓	✓	✓	✓	✓
CO3			✓	✓		✓	✓	✓	✓	✓	✓	✓
CO4			✓	✓		✓		✓	✓	✓		✓
CO5			✓	✓		✓		✓	✓	✓		✓

**Question Paper pattern:**

**Max Marks: 70**

**PART – I**

From the prescribed text book without leaving any lesson

- |                          |                         |             |
|--------------------------|-------------------------|-------------|
| 1. 2 marks questions – 5 | (Any five out of eight) | 5 x 2 = 10M |
| 2. 8 marks questions – 2 | (Any two out of four)   | 2 x 8 = 16M |

**PART – II**

- |                                 |                          |              |
|---------------------------------|--------------------------|--------------|
| 3. General essay – 1            | (Any one out of three)   | 1 x 8 = 8.M  |
| 4. Report Writing – 1           | (Any one out of two)     | 1 x 8 = 8.M  |
| 5. Resume Writing – 1           | (No choice)              | 1 x 8 = 8.M  |
| 6. Idioms – 5                   | (Any five out of eight)  | 5 x 1 = 5.M  |
| 7. Vocabulary - 5               | (Any five out of eight)  | 5 x 1 = 5.M  |
| 8. Correction of sentences - 10 | (Any ten out of fifteen) | 10 x1 = 10.M |

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**Total = 70Marks**

**Sri Venkateswara College of Engineering and Technology (Autonomous)  
Chittoor**

**14ACS25 OBJECT ORIENTED ANALYSIS AND DESIGN  
(Common to CSE & IT)**

**III B.Tech II Semester (IT)**

**L T P C  
3 1 - 3**

**Objectives:**

The objective of this course is to make students to:

1. Acquire knowledge on the notations of unified modeling language..
2. Understand basic and advanced structural modeling concepts.
3. Analyze and design solutions to problems using basic behavioral modeling diagram.
4. Design solutions to problem using the use case and advanced modeling diagram.
5. Understand architecture modeling diagram.

**Unit – I**

**Introduction to UML:** Importance of modeling, principles of modeling, object oriented modeling, conceptual model of the UML, Architecture, and Software Development Life Cycle.

**Unit – II**

**Basic Structural Modeling:** Classes, Relationships, common Mechanisms, and diagrams.

**Advanced Structural Modeling:** Advanced classes, advanced relationships, Interfaces, Types and Roles, Packages.

**Unit – III**

**Class & Object Diagrams:** Terms, concepts, modeling techniques for Class & Object Diagrams.

**Basic Behavioral Modeling-I:** Interactions, Interaction diagrams.

**Unit- IV**

**Basic Behavioral Modeling-II:** Use cases, Use case Diagrams, Activity Diagrams.

**Advanced Behavioral Modeling:** Events and signals, state machines, processes and Threads, time and space, state chart diagrams.

**Unit – V**

**Architectural Modeling:** Component, Deployment, Component diagrams and Deployment diagrams.

**Case Study:** The Unified Library application

**Outcomes:**

At the end of the course, students will be able to :

1. Represent the various elements using UML notation
2. Design the specific problem domain using suitable elements.
3. Apply class and object diagram for design solutions.
4. Apply use case and advanced behavioral modeling diagram for designing solutions.
5. Develop solutions to complex problems using behavioral and architecture modeling concepts.

## Text Books:

1. The Unified Modeling Language User Guide, Grady Booch, James Rumbaugh, IvarJacobson, Pearson Education, 1997.
2. UML 2 Toolkit, Hans-Erik Eriksson, Magnus Penker, Brian Lyons, David Fado, WILEY-Dreamtech India Pvt. Ltd, 2003.

## Reference Books:

1. Fundamentals of Object Oriented Design in UML, Meilir Page-Jones, Pearson Education, 1999.
2. Modeling Software Systems Using UML2, Pascal Roques, WILEY Dreamtech India Pvt. Ltd, 2004.
3. Object Oriented Analysis & Design, AtulKahate, The McGraw-Hill Companies, 2004.

### *Mapping Course Outcomes with Programme outcomes*

Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1			✓		✓		✓				✓	
CO2					✓			✓				
CO3			✓				✓	✓				
CO4			✓					✓				
CO5			✓					✓				



# Sri Venkateswara College of Engineering and Technology (Autonomous)

## Chittoor

### 14ACS26 INTERNET AND WEB TECHNOLOGIES

(Common to CSE & IT)

III B.Tech II Semester (IT)

L T P C

3 1 - 3

#### Objectives:

The objective of this course is to make students to:

1. Understand the concepts of World Wide Web and web Technologies.
2. Understand dynamic web pages using JavaScript (client side script programming).
3. Build XML applications with DTD and style sheets that span multiple domains.
4. Build interactive web applications using JSP, Servlets and database technologies.
5. Understand database programs using JDBC.

#### UNIT - I

##### Introduction to Web Technology:

**Fundamentals of Web:** A brief introduction to the Internet, the World Wide Web, Web Browsers, Web Servers, Uniform Resource Locators, Multipurpose Internet Mail Extensions, The Hyper Text Transfer Protocol, Security, The Web Programmers Toolbox.

**Introduction to XHTML:** Origins and evolution of HTML and XHTML, Basic syntax, Standard XHTML document structure, Basic text markup, Images, Hypertext Links, Lists, Tables, Forms, Frames, Syntactic differences between HTML and XHTML.

#### UNIT - II

**Cascading Style Sheets :** Introduction, Levels of style sheets, Style specification formats, Selector forms, Property value forms, Font properties, List properties, Color, Alignment of text, The Box model, Background images, The < span > and < div > tags, Conflict resolution.

**Java Script:** Introduction to Java Scripts, Objects in Java Script, Dynamic HTML with Java Script

#### UNIT - III

**Extensible Markup Language (XML):** Standard generalized markup language (SGML), basics of XML, XML parsers, the need for the standard Web Servers: PWS, IIS, Tomcat and Apache.

#### UNIT – IV

##### Java Based Web Technologies

**Java Servlets:** Introduction to Java Servlets, Servlet Life Cycle, Http Servlet Class, Http Servlet Request & Response interfaces, Deploying a web application, Session Tracking, Cookies.

**Java Server Pages (JSP):** Introduction to JSP, JSP elements, JSP Directives: Page Directive, Include Directive, Introduction to Java Beans, Action Elements: Use Bean Element, Custom Tag Libraries.

#### UNIT – V

**Database Access:** Database Programming using JDBC, Studying Javax.sql.\* package, Accessing a Database from a JSP Page, Application – Specific Database Actions, Deploying JAVA Beans in a JSP Page, Introduction to struts framework. Ruby concepts, Ajax.

**Outcomes:**

1. Analyze and apply the role of languages HTML, DHTML, JavaScript, database access in the working of the web and web applications.
2. Build dynamic web pages using java scripts (client side programming)
3. Create XML documents and XML Schemes.
4. Build interactive web applications using JSP and Servlets.
5. Use JDBC for database programs

**TEXT BOOKS:**

1. *“Programming the world wide web “*, Fourth edition, Robert W Sebesta, Pearson Education,2008.
2. *“The complete Reference Java 2”*, Fifth Edition, Patrick Naughton and Herbert Schildt, TMH,1999.
3. *“Java Server Pages”*, Hans Bergsten,”SPDO’Reilly ,2001.

**REFERENCE BOOKS:**

1. *Internet and World wide Web How to Program*, 4th edition, Dietel and Nieto ,PHI/Pearson Education Asia, New Jersey, 2008.
2. *The Complete Reference JAVA 2*, 5th edition, H. Schild, Tata McGraw Hill, New Delhi, India,2002.
3. XML by Example, 5th edition, S. M. Grath,Prentice Hall of India / Pearson Education, India,1998.

*Mapping Course Outcomes with Programme outcomes*

Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1			✓									
CO2				✓								
CO3			✓									
CO4								✓				
CO5								✓				

# Sri Venkateswara College of Engineering and Technology (Autonomous)

## Chittoor

### 14ACS27 DATA WAREHOUSING & DATA MINING

(Common to CSE & IT)

III B.Tech II Semester (IT)

L T P C

3 1 - 3

#### Objectives:

Students undergoing this course are expected to:

1. Understand the concepts of data warehouse architecture and implementation.
2. Understand data preprocessing and architecture.
3. Use associate rule mining for handling large data and to understand the concepts of classification for the retrieval purpose.
4. Understand the clustering techniques in details for better organization and retrieval of data.
5. Identify business applications and trends in data mining.

#### UNIT-I

##### INTRODUCTION

Introduction, Data Warehouse, Multidimensional Data Model, Data Warehouse Architecture, Implementation, Further Development, Data Warehousing to Data Mining

#### UNIT-II

##### DATA PREPROCESSING, LANGUAGE, ARCHITECTURES, AND CONCEPT DESCRIPTION:

Why Preprocessing, Cleaning, Integration, Transformation, Reduction, Discretization, Concept Hierarchy Generation, Data Mining Primitives, Query Language, Graphical User Interfaces, Architectures, Concept Description, Data Generalization, Characterizations, Class Comparisons, Descriptive Statistical Measures.

#### UNIT-III

**ASSOCIATION RULES:** Association Rule Mining, Single-Dimensional Boolean Association Rules from Transactional Databases, Multi-Level Association Rules from Transaction Databases.

#### UNIT-IV

**CLASSIFICATION AND CLUSTERING:** Classification and Prediction, Issues, Decision Tree Induction, Bayesian Classification, Association Rule Based, Rule-Based Classification, Classification by Back propagation Prediction, Classifier Accuracy, Cluster Analysis, Types of data, Partitioning methods, Hierarchical methods, Density based methods, Grid based methods, Model based clustering.

#### UNIT-V

**RECENT TRENDS :** Multidimensional Analysis and Descriptive Mining of Complex Data Objects, Spatial Databases, Multimedia Databases, Time Series and Sequence Data, Text Databases, World Wide Web, Applications and Trends in Data Mining.

**Outcomes:**

At the end of this course, students should be able to:

1. Acquire a thorough knowledge in Data Warehousing architecture and implementation.
2. Apply data preprocessing techniques using modern tools.
3. Create association rule for mining the data in real time.
4. Design and deploy appropriate classification and cluster high dimensional data for better organization of data.
5. Evaluate various mining techniques on complex data objects.

**TEXT BOOK:**

“Data Mining: Concepts and Techniques”, J. Han, M. Kamber, Harcourt India / Morgan Kauffman, 2001.

**REFERENCE BOOKS:**

1. “Data Mining: Introductory and Advanced Topics”, Margaret H. Dunham, Pearson Education 2004.
2. “Data Warehousing in the real world”, Sam Anahory, Dennis Murry, Pearson Education 2003.
3. “Data Warehousing, Data Mining & OLAP”, Alex Bezon, Stephen J. Smith, McGraw-Hill Edition, 2001.

*Mapping Course Outcomes with Programme outcomes*

Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1											✓	
CO2		✓			✓							
CO3	✓	✓			✓							
CO4		✓										
CO5					✓						✓	

**Sri Venkateswara College of Engineering and Technology (Autonomous)**  
**Chittoor**  
**14ACS19 COMPUTER NETWORKS**

**III B. Tech II Semester (IT)**

**L T P C**  
**3 1 - 3**

**Objectives:**

The objective of the course is to make students to:

- 1 Understand the basic working of computer networking components.
- 2 Understand channel allocation problem in medium access control sub layer.
- 3 Understand design issues of network layer, Routing and Congestion control.
- 4 Understand the concepts of internet transport protocols (TCP, UDP), DNS, Network security.
- 5 Understand application layer concepts and issues in network security.

**UNIT 1**

**Introduction:** Uses of Computer Networks, Network Hardware, Network Topologies, Network Software, References Models. Examples of Networks: Internet, ARPANET, Third Generation Mobile Phone Networks.

**The Data Link Layer:** Data link Layer Design Issues, Error Detection and Correction, Elementary Data Link Protocols, and Sliding Window Protocols.

**UNIT II**

**The Medium Access Control Sublayer:** The Channel allocation Problem, Multiple Access Protocols, Ethernet- Ethernet Cabling, The Ethernet MAC Sublayer Protocol. The Binary Exponential Back off Algorithm, Ethernet Performance, Wireless LANs- the 802.11 Protocol Stack, The 802.11 Physical Layer, The 802.11 MAC Sublayer Protocol, The 802.11 Frame Structure, Broad Band Wireless.

**UNIT III**

**The Network Layer:** Network Layer Design Issues, Routing Algorithms, Congestion Control Algorithms, Internetworking, the Network Layer in the Internet.

**UNIT IV**

**The Transport Layer:** The Transport Service, Elements of Transport Protocols, The Internet Transport Protocols: UDP, The Internet Transport Protocols: TCP.

**UNIT V**

**The Application Layer:** DNS-The Domain Name System, Electronic Mail. The World Wide web, **Network Security:** Cryptography, Symmetric-Key Algorithms, Public-Key Algorithms.

**Outcomes:**

After completing this course the student will be able to:

- 1 Describe various components and topologies of computer networks
- 2 Use the network reference model layered structure for real time applications.
- 3 Implement various routing protocols from different layers.
- 4 Design, implement and test an efficient algorithmic solution for the give problem.
- 5 Analyze network security mechanics and other issues in the application layer

**TEXT BOOK:**

*Computer Networks*, Fifth Edition, Andrew S. Tanenbaum, David J Wetherall Pearson Education,2011.

**REFERENCE BOOKS:**

1. *Computer Communications and Networking Technologies*, Michael A. Gallo, William M. Hancock, Cengage Learning.
2. *Data Communications and Networking, Fifth Edition*, Behrouz A. Forouzan, Tata McGraw Hill.
3. *Computer Networking: A Top-Down Approach Featuring the Internet*, Six Edition, James F. Kurose, K. W. Ross, Pearson Education,2013.

Mapping Course Outcomes with Programme outcomes

Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1			✓		✓							
CO2			✓									
CO3					✓							
CO4									✓			
CO5											✓	

**Sri Venkateswara College of Engineering and Technology (Autonomous)  
Chittoor**

**14AEC36      DIGITAL IMAGE PROCESSING**

**III B.Tech-II Semester**

**L T P C  
3 1 - 3**

**Objective:**

The course will provide the student:

1. To learn the fundamentals of Image Processing.
2. To learn sampling and reconstruction procedures.
3. To learn the various transforms used in image Processing.
4. To learn how image information are modeled analytically.
5. To learn how to analyze and implement image processing algorithms

**UNIT I**

Digital Image fundamentals: Digital Image representation – Digital image processing System – Visual Perception- Sampling and Quantization - Basic relationships between pixels, and imaging geometry.

**UNIT II**

Image Transforms: Discrete Fourier Transform – Properties of 2 – D Fourier Transform – Fast Fourier Transform, Walsh, Hadamard, Discrete cosine transforms.

**UNIT III**

Image Enhancement: Background enhancement by point processing Histogram processing, Spatial filtering, Enhancement in frequency Domain, Image smoothing, Image sharpening, Colour images

**UNIT IV**

Image Restoration: Degradation model, Algebraic approach to restoration – Inverse filtering – Least Mean Square filters, Constrained Least square restoration.

**UNIT V**

Image Coding and Segmentation : Fidelity criteria, Encoding process, transform encoding, Detection and discontinuities, Edge linking and Boundary detection, Boundary description.

**Learning Outcome:**

On completion of the course the student will be able to:

1. Develops ability to identify, formulate & solve problems involving images.
2. Develops ability to design & conduct experiments, analyze & interpret image data.
3. Design a software, Component or process as per needs & specifications.
4. Understand how image are analyzed to extract features of interest.
5. Understand various filters in image processing.

**TEXT BOOKS:**

1. “Digital Image Processing”, R. C .Gonzalez & R.E. Woods, Addison Wesley/Pearson education, 3<sup>rd</sup> Edition, 2010.
2. “Fundamentals of Digital Image processing”, A .K. Jain, PHI,1989.

**REFERENCE BOOKS:**

1. “Digital Image processing using MATLAB”, Rafael C. Gonzalez, Richard E woods and Steven L.Eddins Tata McGraw Hill, 2010.
2. “Digital Image processing”, S jayaraman, S Esakkirajan, T Veera kumar, Tata McGraw Hill,2014.
3. “Digital Image Processing”, 3rd Edition, William K. Pratt, John Wilely, 2004.

COURSES OUTCOMES	PROGRAM OUTCOMES											
	1	2	3	4	5	6	7	8	9	10	11	12
CO-1	✓											
CO-2			✓									
CO-3					✓							
CO-4						✓						
CO-5						✓					✓	



**Sri Venkateswara College of Engineering and Technology (Autonomous)  
Chittoor**

**14AME57 ROBOTICS  
(Common to EEE, CSE, IT& AE)**

**III B.Tech-II Semester(IT)**

**L T P C  
3 1 - 3**

**Objectives:**

To make the students learn:

1. The basic concepts of robots.
2. The various robot drives and power transmission systems.
3. The fundamentals of robot sensors and its vision system.
4. The concept of arm kinematics and Programming Languages.
5. The applications of robot in various fields.

**UNIT I**

**INTRODUCTION TO ROBOTICS:** Automation versus Robotic technology, Laws of robot, Progressive advancements in Robots, Robot Anatomy, Classification of robots-coordinate method, control method; Specification of robots. End Effectors: Classification of End effectors – Tools as end effectors, Mechanical-adhesive-vacuum-magnetic-grippers.

**UNIT II**

**ROBOT ACTUATORS AND MOTION CONVERSION SYSTEMS:** Robot Actuators-hydraulic, pneumatic and electric, its comparison, Motion Conversion: Rotary-to-Rotary motion conversion- Gears, Harmonic Drives, Belt-and- pulley systems, Rotary-to-Linear motion conversion- Lead screws, Rack and Pinion systems, cams.

**UNIT III**

**ROBOTIC SENSORS:** Meaning of sensing, selection of sensor for a robot, types of sensors -Position sensors, range sensors, velocity sensors, touch sensors, force and torque sensors.  
**ROBOT VISION-** Block diagram of vision system, lighting techniques and devices, analog to digital conversion, Image storage, Image processing and Analysis, Object recognition, Feature extraction.

**UNIT IV**

**ROBOT ARM KINEMATICS:** Homogeneous transformations, Basics of forward kinematics, Inverse kinematics.

**ROBOT PROGRAMMING:** Requirements of good programming language, Types of Robot programming, Robot programming languages and features- AL, AML, RPL, and VAL.

**UNIT V**

**ROBOTIC APPLICATIONS:** Present applications-Material Transfer, Material handling, loading and unloading, processing, welding, spray painting, Assembly and Inspection; Future applications.

## Outcomes:

*After completion of the course, the student will be able to:*

1. Describe the basic concepts of robotics.
2. Summarize the perception about robot components and programme in industry.
3. Select the type of robot eco-friendly for typical manufacturing industry and service sector.
4. Analyze the manipulator kinematics, dynamics and trajectory planning for typical robot with the usage of computer aided technology to develop automotive components
5. Choose a program that the robot can integrate with the manufacturing system to produce quality products with minimum cost with optimum usage of resources.
6. Formulate a project team to promote the system integration and enrichment of knowledge with continuous learning and career progress.

## Text Books

1. Richard D. Klafter, Robotics Engineering, Bangalore, New Delhi, Prentice Hall, Eastern Economy Edition, 1989.
2. R.K. Mittal & I.J. Nagrath, Robotics and Control, New Delhi, 3<sup>rd</sup> Edition, Tata McGraw Hill, 2007.

## References:

1. Ganesh S. Hegde, Industrial Robotics, Lakshmi Publications (P), LTD
2. M.P. Groover, Industrial Robotics, New Delhi, Tata McGraw Hill, 2008.
3. S. K. Saha, Introduction to Robotics, The McGraw Hill Companies, 2008.

## Mapping Of COs with POs:

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	2							1				
CO2		2		2					1			
CO3		1				2	2	1				
CO4		2	2		2						2	
CO5			3	2	2	1	2				2	
CO6									3	3		2

Competency addresses outcome: - 1 = slightly; 2 = moderately; 3 = substantially

**Sri Venkateswara College of Engineering and Technology (Autonomous)  
Chittoor**

**14AEC31 MEMS & MICROSYSTEMS  
(Common to CSE & IT)**

**III B. Tech - II Semester(IT)**

**L T P C**

**3 1 - 3**

**Objectives:**

The course will provide the student:

1. To know about various MEMS and Microsystems products.
2. To understand the construction and working principle of various Microsensors.
3. To know about the different materials used for the construction of MEMS and Microsystems.
4. To know about the steps involved in Microsystems fabrication processes.
5. To Know about Micromanufacturing and Microsystems packaging.

**UNIT – I**

**OVERVIEW OF MEMS AND MICROSYSTEMS:**

MEMS and Microsystems, Typical MEMS and Microsystems products, Evolution of Micro fabrication, Microsystems and Microelectronics, The Multidisciplinary nature of Micro system design and manufacture, Microsystems and Miniaturization, Applications of Microsystems in the Automotive industry and Applications of Microsystems in other industries.

**UNIT-II**

**WORKING PRINCIPLES OF MICROSYSTEMS:**

Introduction, Various Microsensors, Microactuation, MEMS with Microactuators, Micro-accelerometers, and Microfluidics.

**UNIT-III**

**MATERIAL FOR MEMS AND MICROSYSTEMS:**

Introduction, Substrates and Wafers, Active Substrate Materials, Silicon as a Substrate material, Silicon Compounds, Silicon Piezoresistors, Gallium Arsenide, Quartz, Piezoelectric crystals, Polymers and Packaging materials

**UNIT-IV**

**MICROSYSTEM FABRICATION PROCESSES:**

Introduction, Photolithography, Ion Implantation, Diffusion, Oxidation, Chemical Vapor Deposition, Physical Vapor Deposition-Sputtering, Deposition by Epitaxy, and Etching.

**UNIT-V**

**MICROMANUFACTURING AND MICROSYSTEM PACKAGING:**

Micromanufacturing: Introduction, Bulk Micromanufacturing, Surface Micromachining and The LIGA process.

**Microsystem Packaging:** Introduction, Overview of Mechanical Packaging of Microelectronics, Various Microsystem Packaging techniques, Interfaces in Microsystem Packaging and Essential Packaging Technologies.

**Outcomes:**

After the completion of the course, the student will be able to:

1. Understand about various MEMS and Microsystem products.
2. Understand about the construction and functionality of various Microsensors.
3. Know about the materials used for the construction of MEMS and Microsystems.
4. Understand the entire Microsystems fabrication processes.
5. Understand Micromanufacturing and Microsystems packaging technologies.

**TEXT BOOKS:**

1. "MEMS & Microsystems Design and Manufacture", Tai-Ran Hsu, Tata McGraw Hill edition, 2008.
2. "Foundations of MEMS" Chang Liu, Pearson Education India Limited, 2009.

**REFERENCE BOOKS:**

1. "Fundamentals of Microfabrication" Marc Madou, CRC press 2002.
2. "RF Microelectronics", Stephen D. Senturia, Kluwer Academic Publishers, 2001.

COURSES OUTCOMES	PROGRAM OUTCOMES											
	1	2	3	4	5	6	7	8	9	10	11	12
CO-1	✓		✓									
CO-2	✓		✓									
CO-3	✓		✓									
CO-4	✓		✓		✓				✓			
CO-5	✓		✓		✓				✓			

**Sri Venkateswara College of Engineering and Technology (Autonomous)  
Chittoor**

**14ACS32 DATA ENGINEERING AND WEB TECHNOLOGIES LAB  
(Common to CSE & IT)**

**III B.Tech-II Semester(IT)**

**L T P C**

**- - 4 2**

**Objectives:**

1. To identify different attributes of credit assessment and develop a decision tree
2. To derive associations from dataset and do clustering using weka
3. To develop web pages.
4. To program Client side scripting languages
5. To implement Java servlets in web technology

**DATA Engineering LAB**

Credit Risk Assessment

**Description:** The business of banks is making loans. Assessing the credit worthiness of an applicant is of crucial importance. You have to develop a system to help a loan officer decide whether the credit of a customer is good, or bad. A bank's business rules regarding loans must consider two opposing factors. On the one hand, a bank wants to make as many loans as possible. Interest on these loans is the banks profit source. On the other hand, a bank cannot afford to make too many bad loans. Too many bad loans could lead to the collapse of the bank. The bank's loan policy must involve a compromise: not too strict, and not too lenient.

To do the assignment, you first and foremost need some knowledge about the world of credit. You can acquire such knowledge in a number of ways.

1. Knowledge Engineering. Find a loan officer who is willing to talk. Interview her and try to represent her knowledge in the form of production rules.
2. Books. Find some training manuals for loan officers or perhaps a suitable textbook on finance. Translate this knowledge from text form to production rule form.
3. Common sense. Imagine yourself as a loan officer and make up reasonable rules which can be used to judge the credit worthiness of a loan applicant.
4. Case histories. Find records of actual cases where competent loan officers correctly judged when, and when not to, approve a loan application.

**The German Credit Data:**

Actual historical credit data is not always easy to come by because of confidentiality rules. Here is one such dataset, consisting of 1000 actual cases collected in Germany. credit dataset (original) Excel spreadsheet version of the German credit data (Down load from web). In spite of the fact that the data is German, you should probably make use of it for this assignment. (Unless you really can consult a real loan officer !)

A few notes on the German dataset

- DM stands for Deutsche Mark, the unit of currency, worth about 90 cents Canadian (but looks and acts like a quarter).
- owns\_telephone. German phone rates are much higher than in Canada so fewer people own telephones.

- foreign\_worker. There are millions of these in Germany (many from Turkey). It is very hard to get German citizenship if you were not born of German parents.
- There are 20 attributes used in judging a loan applicant. The goal is to classify the applicant into one of two categories, good or bad.

**Subtasks: (Turn in your answers to the following tasks)**

1. What attributes do you think might be crucial in making the credit assessment ? Come up with some simple rules in plain English using your selected attributes.
2. One type of model that you can create is a Decision Tree - train a Decision Tree using the complete dataset as the training data. Report the model obtained after training.
3. One approach for solving the problem encountered in the previous question is using cross-validation ? Describe what is cross validation briefly. Train a Decision Tree again using cross validation and report your results. Does your accuracy increase/decrease? Why ? (10 marks)
4. Check to see if the data shows a bias against "foreign workers" (attribute 20),or "personal-status" (attribute 9). One way to do this (perhaps rather simple minded) is to remove these attributes from the dataset and see if the decision tree created in those cases is significantly different from the full dataset case which you have already done. To remove an attribute you can use the preprocess tab in Weka's GUI Explorer. Did removing these attributes have any significant effect? Discuss.
5. Another question might be, do you really need to input so many attributes to get good results? Maybe only a few would do. For example, you could try just having attributes 2, 3, 5, 7, 10, 17 (and 21, the class attribute (naturally)). Try out some combinations. (You had removed two attributes in problem 7. Remember to reload the arff data file to get all the attributes initially before you start selecting the ones you want.)

**6. Associations**

Derive associations manually from the following dataset.

@relation weather.symbolic

@attribute outlook {sunny, overcast, rainy}

@attribute temperature {hot, mild, cool}

@attribute humidity {high, normal}

@attribute windy {TRUE, FALSE}

@attribute play {yes, no}

@data

sunny, hot, high, FALSE,no

sunny, hot, high, TRUE,no

overcast, hot, high, FALSE, yes

rainy, mild, high, FALSE, yes

rainy, cool, normal, FALSE, yes

rainy, cool, normal, TRUE, no  
overcast, cool, normal, TRUE, yes  
sunny, mild, high, FALSE, no  
sunny, cool, normal, FALSE, yes  
rainy, mild, normal, FALSE, yes  
sunny, mild, normal, TRUE, yes  
overcast, mild, high, TRUE, yes  
overcast, hot, normal, FALSE, yes  
rainy, mild, high, TRUE, no

## 7. Clustering

- i. Open Weka and Load the data set editor. Get familiarize with the editor operations.
  - a. Load the weather. nominal dataset. Use the filter weka. Unsupervised, instance. Remove with Values to remove all instances in which the humidity attribute has the value high. To do this, first make the field next to the Choose button show the text Remove with Values. Then click on it to get the Generic Object Editor window, and figure out how to change the filter settings appropriately.
  - b. Undo the change to the dataset that you just performed, and verify that the data has reverted to its original state.
- ii. Choosing k-means clustering algorithm for clustering use the Cancer data (.arff) perform clustering with a Euclidean distance function and visually inspect the nature of the clusters.

8. Analyzing data with ROLLAP, CUBE.

9. Cube slicing – come up with 2-D view of data.

10. Drill-down or Roll-down- going from summary to more detailed data.

11. Roll up – summarize data along a dimension hierarchy.

12. Dicing – projecting 2-D view of data.

13. Creating Star Schema/snowflake Schema.

## WEB TECHNOLOGIES LAB

### Week 1:

1. Develop a static web page that demonstrates basic HTML tags.

### Week 2:

2. Develop a web page to demonstrate different types of CSS.

### Week 3:

3. Develop a web application using Java script to perform the following tasks:
  - a. Registration validation
  - b. User login
  - c. User profile and credit card payment.

### Week 4:

4. Design an XML document to structure the student data and validate using DTD.

**Week 5:**

5. Design an XML document to structure and display the data using an XSL.

**Week 6:**

6. Install TOMCAT web server. Convert the static web pages of assignments 2 into dynamic web pages using servlets and cookies. Hint: User's information (user id, password, credit card number) would be stored in web. Xml. Each user should have a separate shopping cart

**Week 7:**

7. a. Implement a simple Hello world program using Java Servlets.  
b. Implement User Management application using Java Servlets.

**Week 8:**

8. a. Implement a simple JSP page to perform simple functions.  
b. Implement User Management application using JSP.

**Week 9:**

9. Implement session Tracking and cookie Management in JSP.

**Week 10:**

10. Develop a simple application to create a custom tag using JSP.

**Outcomes:** At the end of the course the student will be able to

1. Analyze data with ROLLAP,CUBE
2. Implement cube Slicing drill down, Roll up and Dicing of data
3. Develop web pages.
4. Program Client side scripting languages
5. Implement Java servlets in web technology

Course Outcomes	PROGRAM OUTCOMES											
	1	2	3	4	5	6	7	8	9	10	11	12
CO-1		✓					✓				✓	
CO-2		✓					✓				✓	
CO-3	✓				✓				✓			
CO-4	✓				✓				✓			
CO-5	✓				✓				✓			



**Sri Venkateswara College of Engineering and Technology (Autonomous)  
Chittoor**

**14AHS14 TECHNICAL ENGLISH LAB-II**

**(Common to EEE, ECE, CSE & IT)**

**III B.Tech-II Semester (IT)**

**L T P C**

**- - 4 2**

**Objectives:**

1. To inculcate the confidence of using correct pronunciation (recollecting the sounds of Monophthongs, diphthongs, consonants and identifying the rules of accent/stress and intonation).
2. To enable the students to improve the proficiency in English (based on the previous learning) at all levels.
3. To train the students to use English effectively in participating group discussions, interviews & in public speaking.
4. To enhance the confidence in problem solving while facing the career.
5. To train the students to face job interviews with confidence.

**1. Listening comprehension:** Listening to passage – Understanding the passage – answering the questions – personal and professional situations.

**2. Resume writing:** Structure – format style – defining career objective – projecting the strengths – preparing covering letter.

**3. Speaking Activities:**

**Just A Minute (JAM)** – importance – rules – etiquette – body language.

**Debates** – importance – rules - beginning – taking a stand – supporting & defending.

**Describing objects/people/situations:** how to describe – physical properties – material-functions – features - complexion - Attire - situation – place – time – theme.

**4. Interview:** Preparing for interview – physically and mentally – answering strategy – face-to-face interview – panel interview - tele interview – video conferencing.

**5. Oral & PowerPoint Presentation:** Importance – developing and organizing the presentations – verbal and visual support - using body language – how to make it effective.

**MINIMUM REQUIREMENT FOR ELCS LAB:**

- 1) Computer aided language lab for 70 students, 70 systems – one master console software for self-study.
- 2) T.V, digital stereo – audio – visual system.
- 3) Computer laboratory with LAN Connectivity of minimum 70 multimedia systems with the following configuration.
  - a) Intel Pentium® D 3.00GHZ
  - b) RAM-1GB minimum
  - c) Hard disk – 160GB

d) Headphones of durable quality.

### Prescribed Software – Globarena

### Suggested Software:

- K-Van Advanced Communication Skills
- TOEFL&GRE (KAPLAN,AARCO&BARRONS,USA, Cracking GRE by CLIFFS)
- *DELTA's key to the Next Generation TOEFL Test: Advanced Skill Practice.*
- Lingua TOEFL CBT Insider, by Dreamtech
- Cambridge Advanced Learners' English Dictionary with CD.
- Oxford AdvancedLearner'sCompass,8<sup>th</sup>Edition
- SanjayKumar&PushpLata.2011. Communication Skills, OUP

### Outcomes:

1. The students will use English fluently in communication by following LSRW.
2. The students will develop the art of oral presentation to develop leadership qualities.
3. The students will assimilate the importance of English in the modern world to compete with the career in the challenging world.
4. The students will strengthen the required skills to be employable.
5. The students will face the interviews confidently and improve the chances of getting a job.

### Reference Books:

- 1 *Technical Communication, 2/e, Meenakshi Raman, Oxford University Press, New Delhi.*
- 2 *Developing Communication Skills, Krishna Mohan & Meera Benerji, Macmillan*
- 3 *English Skills for Technical Students, WBSCTE with British Council, OL*
- 4 *TOEFL & GRE (KAPLAN, AARCO & BARRONS, USA, Cracking GRE by CLIFFS)*
- 5 *Everyday Dialogues in English, Robert J Dixon, Prentice – Hall of India Ltd.*
- 6 *Professional Communication, Koneru, by McGraw Hill.*

### MAPPPING OF COs WITH POS:

COURSE OUTCOME S	PROGRAMME OUTCOMES											
	1	2	3	4	5	6	7	8	9	10	11	12
CO1			✓	✓		✓	✓	✓	✓	✓		✓
CO2			✓	✓		✓	✓	✓	✓	✓		✓
CO3			✓	✓		✓		✓	✓	✓		✓
CO4			✓	✓		✓	✓	✓	✓	✓		✓
CO5			✓	✓					✓			✓

**Sri Venkateswara College of Engineering and Technology (Autonomous)  
Chittoor**

**14AMB01 MANAGEMENT SCIENCE(Audit Course)  
(Common to EEE, ECE,CSE & IT)**

**III B.Tech-II Semester(IT)**

**L T P C**

**3 - - -**

**Objectives:**

- 1 To learn the principles of management
- 2 To apply concepts in administering technology driven industrial units.
- 3 To gain an understanding of management functional areas like Production, HR, Marketing etc
- 4 To develop knowledge using OR techniques for project management
- 5 To analyse the importance of production in the organization

**UNIT I**

**Introduction to Management:** Nature, importance and Functions of Management, Approaches to Management - Taylor's Scientific Management - Henry Fayol's Principles of Management, Maslow's Theory of Human Needs, Douglas McGregor's Theory X and Theory Y, Leadership Styles – Introduction to Organization –Types of Mechanistic and organic structures.

**UNIT II**

**Operations Management:** Principles and Types of Plant Layout - Methods of production (Job, batch and Mass Production), Work Study - Basic procedure involved in Method Study and Work Measurement-Statistical Quality Control:  $\bar{x}$  chart, R chart, c chart, p chart, (simple Problems), Acceptance Sampling, TQM Concept - Deming's principles, Six sigma, Bench marking.

**UNIT III**

**Materials Management:** Objectives, Need for Inventory control, EOQ, ABC Analysis, Purchase Procedure, Stores Management and Stores Records, MRP, JIT, **Marketing:** Functions of Marketing, Marketing Mix, Product Life Cycle, Channels of Distribution.

**UNIT IV**

**Human Resources Management (HRM):** Basic functions of HR Manager: Manpower planning, Recruitment, Selection, Training and Development, Wage and Salary Administration, Job Evaluation and Merit Rating, Performance Appraisal.

## UNIT V

**Project Management (PERT/CPM):** Network Analysis, Programme Evaluation and Review Technique (PERT), Critical Path Method (CPM), Identifying critical path, Probability of Completing the project within given time, Project Cost Analysis, Project Crashing. (Simple Problems)

### Outcomes:

After completion of this course students will be able to:

- 1 Apply various areas of functional management for the prospects of business organization
- 2 Apply management principles for decision making
- 3 Handle intricacies of projects efficiently
- 4 use tools and techniques to become an effective manager
- 5 Apply production tools and techniques in every area of business

### TEXT BOOKS:

1. Management Science, 4/e, Aryasri, TMH, 2009.
2. Management, 6<sup>th</sup> Edition, Stoner, Freeman, Gilbert, Pearson Education, New Delhi, 2004.
3. Production and Operations Management, 3/e, Panner Selvem, Prentice Hall of India, 2012

### REFERENCES:

- 1., Marketing Management, 12/e, Kotler Philip & Keller Kevin Lane, PHI, 2005.
2. Essentials of Management, 6/e, Koontz & Weihrich, TMH, 2005.
3. Personnel and Human Resource Mangement, Subba Rao. P, Himalaya Publishing House, 2000

#### *Mapping course outcomes with POs*

Course outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	✓											
CO2		✓										
CO3				✓								
CO4						✓						
CO5								✓		✓		

**Sri Venkateswara College of Engineering and Technology (Autonomous)  
Chittoor**

**IV B.Tech – I Semester(IT)**

**L T P C  
3 1 - 3**

**14AIT08 INFORMATION SECURITY**

**OBJECTIVES:**

The objective of this course is to make students to:

1. Understand information security's importance in our increasingly computer-driven world.
2. Understand various security attacks and security service.
3. Understand various security policies (such as authentication, integrity and confidentiality), as well as protocols to implement such policies in form of message exchanges.
4. Understand basic information security principles and approaches.
5. Understand the different versions of SNMP protocols

**UNIT I**

**SECURITY ATTACKS:**

Security Attacks (Interruption, Interception, Modification and Fabrication), Security Services (Confidentiality, Authentication, Integrity, Non-repudiation, access Control and Availability) and Mechanisms, a model for Internetwork Security, Internet Standards and RFCs, Buffer overflow & format string vulnerabilities, TCP session hijacking, ARP attacks, route table modification, UDP hijacking, and man-in-the-middle attacks.

**UNIT II**

Conventional Encryption Principles, Conventional encryption algorithms, cipher block modes of operation, location of encryption devices, key distribution Approaches of Message Authentication, Secure Hash Functions and HMAC. Public key cryptography principles, public key cryptography algorithms, digital signatures, digital Certificates, Certificate Authority and key management Kerberos, X.509 Directory Authentication Service.

**UNIT III**

**EMAIL PRIVACY:** Pretty Good Privacy (PGP) and S/MIME. IP Security Overview, IP Security Architecture, Authentication Header, Combining Security Associations and Key Management.

**UNIT IV**

Web Security Requirements, Secure Socket Layer (SSL) and Transport Layer Security (TLS), Secure Electronic Transaction (SET).

**UNIT V**

Basic concepts of SNMP, SNMPv1 Community facility and SNMPv3. Intruders, Viruses and related threats, Firewall Design principles.

## OUTCOMES:

At the end of this course, students will be able to:

1. Demonstrate conventional Encryption Principles and algorithms.
2. Evaluate the performance of cryptography algorithms.
3. Develop an Intrusion Detection Systems using appropriate modern tool.
4. Analyze the major information security threats and countermeasures.
5. Compare the performance of a network using SNMP protocol.

## TEXT BOOKS:

1. Network Security Essentials (Applications and Standards), William Stallings, Pearson Education.
2. Hack Proofing your network, Ryan Russell, Dan Kaminsky, Rain Forest Puppy, Joe Grand, David Ahmad, Hal Flynn, Ido Dubrawsky, Steve W. Manzuik and Ryan Permech., Wiley Dreamtech.

## REFERENCEBOOKS:

1. Fundamentals of Network Security, Eric Maiwald. Dreamtech press.
2. Network Security - Private Communication in a Public World, Charlie Kaufman, Radia Perlman and Mik, Speciner, Pearson/PHI.
3. Cryptography and network Security, Stallings, Third edition, PHI/Pearson.

## Mapping of Cos with POs:

Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	✓								✓			
CO2		✓										
CO3				✓					✓		✓	
CO4			✓			✓						
CO5							✓					

# Sri Venkateswara College of Engineering and Technology (Autonomous)

Chittoor

14ACS35 CLOUD COMPUTING

(Common to CSE & IT)

IV B.Tech-I Semester(IT)

L T P C

3 1 - 3

## Objectives:

The Objective of this course is to make students to

- 1 To analyze the components of cloud computing and its business perspective..
- 2 Understand the various services of cloud and to identify various relations in cloud based information systems
- 3 To collaborate with real time cloud services...
- 4 Understand various cloud virtualization applications.

## UNIT I

**Overview of Cloud Computing:** Meaning of the terms cloud and cloud computing, cloud based service offerings, Grid computing vs Cloud computing, Benefits of cloud model, limitations, legal issues, Key characteristics of cloud computing, Challenges for the cloud, The evolution of cloud computing.

## UNIT II

**Web services delivered from the cloud:** Infrastructure as a service, Platform-as-a-service, Software-as-a-service. Building Cloud networks: Evolution from the MSP model to cloud computing and software -as-a-service, The cloud data center, SOA as step toward cloud computing, Basic approach to a data center based SOA.

## UNIT-III

**CLOUD SERVICES:** Collaborating on calendars, Schedules, and Task Management, Exploring online scheduling applications, Exploring online planning and task management. Collaborating on Word Processing, Storing and sharing files and Other Online Content. Exploring Online Photo-Editing Applications.

## UNIT IV

**INTRODUCTION TO VIRTUALIZATION** History of virtualization, objectives of virtualization, benefits of virtualized technology, VIRTUALIZATION TECHNOLOGIES VMware, Microsoft Hyper-V, Virtual Iron, Xen, Ubuntu (Server Edition), Software Virtualization, Para Virtualization, OS Virtualization, Oracle Virtualization, Storage Virtualization Technologies, Virtualization and Storage Management.

## UNIT V

**Security in the Cloud:** Cloud security challenges, Software-as-a-service security. Common Standards in Cloud computing: The open cloud consortium, The distributed management task force, standards for application developers, standards for messaging, standards for security.

### Outcomes:

At the end of course student should be able to

1. Use practical cloud applications in daily life.
2. Apply various cloud services in real time applications.
3. Collaborate with different practical web applications for business management.
4. Differentiate cloud security services and standards.

### TEXT BOOKS:

1. “*Cloud Computing implementation, management and security*”, John W. Ritting house, James F. Ransome ,CRC Press, Taylor &Francis group, 2010.
2. “*Cloud Computing Virtualization Specialist Complete Certification Kit - Study Guide Book*” ,Ivanka Menken and Gerard Blokdi j k , , EmereoPvt Ltd, April 2009.
3. Michael Miller, *Cloud Computing: Web-Based Applications That Change the Way You Work and Collaborate Online*, Que Publishing, August 2008.

### REFERENCES:

1. *Cloud Application Architectures Building Applications and Infrastructure in the Cloud*, George Reese, and O’Reilly Media Released, April 2009.
2. *Cloud Computing and SOA convergence in your enterprise*”, David S. Linthicum, Addison- Wesley,2009.
3. “*Cloud Computing: A practical approach*”, Anthony T.velte, TobJ.velte Robert Elsenpeter ,Tata Mc Graw Hill , 2010.

*Mapping Course Outcomes with Programme outcomes*

Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	✓	✓			✓			✓			✓	✓
CO2									✓	✓		
CO3			✓	✓			✓					
CO4					✓	✓				✓		



# Sri Venkateswara College of Engineering and Technology (Autonomous)

Chittoor

14ACS36 SOFTWARE TESTING

(Common to CSE & IT)

IV B.Tech-I Semester(IT)

L T P C

3 1 - 3

## OBJECTIVES:

The objective of the course is to make students to:

1. Understand the purpose of testing.
2. Understand the various types of transaction and dataflow testing.
3. Understand the process of domain testing
4. Understand the concepts of logic based testing.
5. Understand graph matrices and tools involved in test automation.

## UNIT I

**Introduction:** Purpose of testing, Dichotomies, model for testing, consequences of bugs, taxonomy of bugs.

**Flow graphs and Path testing:** Basics concepts of path testing, predicates, path predicates and Achievable paths, path sensitizing, path instrumentation, application of path testing.

## UNIT II

**Transaction Flow Testing:** Transaction flows, transaction flow testing techniques.

**Data flow testing:** Basics of data flow testing, strategies in data flow testing.

## UNIT III

**Domain Testing:** Domains and paths, Nice & ugly domains, domain testing, domains and interface testing, domain and interface testing, domains and testability.

**Paths, Path Products and Regular Expressions:** Path products & path expression, reduction Procedure, applications, regular expressions & flow anomaly detection.

## UNIT IV

**Logic Based Testing:** overview, decision tables, path expressions, kv charts, specifications, building tools (The student should be given an exposure to a tool like IBM Rational Functional Tester).

## UNIT V

**Graph Matrices and Application:** Motivational overview, matrix of graph, relations, power of a matrix, node reduction algorithm, building tools (The student should be given an exposure to a tool like IBM Rational Quality Manager).

## OUTCOMES:

At the end of the course, students should be able to:

1. Develop the importance of testing and debugging cases.
2. Perform transaction flow testing and data flow testing on various applications.
3. Design the applications of domain testing and regular expressions.
4. Apply logic based testing techniques.
5. Handle automation test tools like IBM rational functional tester and IBM Rational quality manager.

**TEXT BOOKS:**

1. *Software Testing techniques*, Second Edition, Boris Beizer, Dreamtech, 2003.
2. *Software Testing Tools*, Dr.K.V.K.K.Prasad, Dreamtech,2004.

**REFERENCE BOOKS:**

1. *The craft of software testing*, Brian Marick, Pearson Education,1995.
2. *Software Testing*, Third Edition, P.C.Jorgensen, Aurbach Publications,1995.
3. *Software Testing*, N.Chauhan, Oxford University Press,2010.

**Mapping of Cos with POs:**

Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	✓											
CO2					✓							
CO3								✓				
CO4											✓	
CO5										✓		

# Sri Venkateswara College of Engineering and Technology (Autonomous)

Chittoor

14AEC34 EMBEDDED SYSTEMS

(Common to ECE & IT)

IV B.Tech - I Semester(IT)

L T P C  
3 1 - 3

## OBJECTIVES:

The Course will provide the student:

1. To Know the fundamental concepts of embedded systems.
2. To study state machine models and concurrent process models.
3. To study processor peripherals and communication interfaces.
4. To learn the kernel, RTOS.
5. To study hardware and software design.

## UNIT I

**INTRODUCTION:** Embedded systems overview, design challenge, processor technology, IC technology, Design Technology, Trade-offs. Custom single purpose processors - RT-level combinational logic, sequential logic (RT-level), custom single purpose processor design (RT-level), optimizing custom single purpose processors.

### GENERAL PURPOSE PROCESSORS:

Basic architecture, operation, Pipelining, Programmer's view, development environment, Application Specific Instruction-Set Processors (ASIPs)– Micro Controllers and Digital Signal Processors.

## UNITII

**STATE MACHINE AND CONCURRENT PROCESS MODELS:** Introduction, models Vs. languages, finite state machines with data path model (FSMD), using state machines, program state machine model (PSM), concurrent process model, concurrent processes, communication among processes, synchronization among processes, implementation, data flow model, real-time systems.

## UNITIII

**STANDARD SINGLE PURPOSE PROCESSORS: PERIPHERALS** – Timers, Counters and Watch dog timers, real time clock.

**COMMUNICATION INTERFACE:** Need for communication interfaces, RS232 / UART, RS422/ RS485, USB, Infrared, IEEE 1394 Firewire, Ethernet, IEEE 802.11, Blue tooth.

## UNITIV

**EMBEDDED/RTOS CONCEPTS:** Architecture of the Kernel, Tasks and Task scheduler, Interrupt service routines, Semaphores, Mutex. Mailboxes, Message Queues, Event Registers, Pipes, Signals. Timers, Memory Management, Priority inversion problem, Embedded operating systems Embedded Linux, Real-time operating systems, RT Linux, Handheld operating systems, Windows CE.

## UNIT V

**DESIGN TECHNOLOGY:** Introduction, Automation, Synthesis, parallel evolution of compilation & Synthesis, RT Synthesis, Behavioral Synthesis, System synthesis & Hardware/Software Co-Design, verification, Hardware/Software co-simulation, Reuse of intellectual property codes.

### OUTCOMES:

On completion of the course the students will be able to:

1. Understand the fundamental concepts of Embedded systems.
2. Know the state machine models and concurrent process models.
3. Know the watch dog timer, real time clock and communication interfaces.
4. Understand the RTOS and kernel.
5. Understand the hardware and software design.

### TEXT BOOKS:

1. Embedded System Design – A Unified Hardware/Software Introduction, Frank Vahid, Tony D. Givargis, John Wiley, 2002.
2. Embedded / Real Time Systems , KVKK Prasad, Dreamtech Press, 2005.

### REFERENCE BOOKS:

1. Embedded Microcomputer Systems, Jonathan W. Valvano, Brooks / Cole, Thompson Learning.
2. An Embedded Software Primer, David E. Simon, Pearson Ed., 2005.
3. Introduction to Embedded Systems, Raj Kamal, TMS, 2002.

### Mapping of Cos with POs:

Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1			✓	✓								
CO2			✓		✓							
CO3					✓		✓					
CO4			✓		✓							
CO5					✓						✓	

# **Sri Venkateswara College of Engineering and Technology (Autonomous)**

## **Chittoor**

### **14AIT09 WIRELESS & MOBILE COMPUTING (CBCC-I)**

**IV B.Tech – I Semester(IT)**

**L T P C  
3 1 - 3**

#### **OBJECTIVES:**

The objective of this course is to make students to:

1. Understand the specifications and functionalities of various protocols/standards of mobile networks.
2. Build working knowledge on various telephone and satellite networks.
3. Understand the working principles of wireless LAN and its standards.
4. Build skills in working with Wireless Application Protocols to develop mobile content applications.
5. Understand the TCP/ IP header format.

#### **UNIT I WIRELESS COMMUNICATION FUNDAMENTALS**

Introduction – Wireless transmission – Frequencies for radio transmission – Signals – antennas – Signal Propagation – Multiplexing – Modulations – Spread spectrum –MAC – SDMA – FDMA – TDMA – CDMA – Cellular Wireless Networks.

#### **UNIT II TELECOMMUNICATION NETWORKS**

Telecommunication systems – GSM – GPRS – DECT – UMTS – IMT-2000 – Satellite Networks - Basics – Parameters and Configurations – Capacity Allocation – FAMA and DAMA – Broadcast Systems – DAB - DVB.

#### **UNIT III WIRELESS LAN**

Wireless LAN – IEEE 802.11 - Architecture – services – MAC – Physical layer – IEEE 802.11a - 802.11b standards – HIPERLAN – Blue Tooth.

#### **UNIT IV MOBILE NETWORK LAYER**

Mobile IP – Dynamic Host Configuration Protocol - Routing – DSDV – DSR – Alternative Metrics.

#### **UNIT V TRANSPORT AND APPLICATION LAYERS**

Traditional TCP – Classical TCP improvements – WAP, WAP 2.0.

#### **OUTCOMES:**

Upon completion of the subject, students will be able to

1. Analyse and compare the performance of different data dissemination techniques and algorithms for mobile real-time applications.
2. Understand the characteristics and limitations of mobile hardware devices including their user-interface modalities.

3. Develop applications that are mobile-device specific and demonstrate current practice in mobile computing contexts.
4. Understand the design and development of context-aware solutions for mobile devices.
5. Establish a TCP/IP based Network.

#### TEXT BOOKS

1. Mobile Communications, Second Edition, Jochen Schiller, PHI/Pearson Education, 2003. (Unit I Chap 1,2&3- Unit II chap 4,5 &6-Unit III Chap 7. Unit IV Chap 8- Unit V Chap 9&10).
2. Wireless Communications and Networks, William Stallings, PHI/Pearson Education, 2002. (Unit I Chapter – 7&10-Unit II Chap 9).

#### REFERENCES BOOKS:

1. Principles of Wireless Networks, Kaveh Pahlavan, Prasanth Krishna moorthy, PHI/Pearson Education, 2003.
2. Principles of Mobile Computing, Uwe Hansmann, Lothar Merk, Martin S. Nicklons and Thomas Stober, Springer, New York, 2003.
3. Mobile Communication Systems, Hayszt of Wesolowshi, John Wiley and Sons Ltd, 2002.

#### Mapping of Cos with POs:

Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	✓						✓					
CO2		✓							✓		✓	
CO3			✓			✓	✓	✓			✓	
CO4			✓									
CO5				✓								

# Sri Venkateswara College of Engineering and Technology (Autonomous)

## Chittoor

### 14ACS39 BIG DATA ANALYTICS

(Common to CSE & IT)

IV B.Tech-I Semester(IT)

L T P C

3 1 - 3

#### Objectives:

The objective of this course is to make students to:

1. Understand big data analytics principles.
2. Understand data analysis techniques
3. Understand techniques involved in Mining data streams.
4. Understand frequent item sets and clustering techniques.
5. Understand Analytics frameworks.

#### UNIT I

##### Introduction To Big Data:

Introduction to Big Data Platform Traits of Big data -Challenges of Conventional Systems - Web Data –Evolution of Analytic Scalability -Analytic Processes and Tools -Analysis vs Reporting -Modern Data Analytic Tools -Statistical Concepts: Sampling Distributions -Re-Sampling -Statistical Inference -Prediction Error.

#### UNIT II

##### Data Analysis:

Regression Modeling -Multivariate Analysis -Bayesian Modeling -Inference and Bayesian Networks -Support Vector and Kernel Methods -Analysis of Time Series: Linear Systems Analysis -Nonlinear Dynamics -Rule Induction -Neural Networks: Learning And Generalization -Competitive Learning -Principal Component Analysis and Neural Networks -Fuzzy Logic: Extracting Fuzzy Models from Data -Fuzzy Decision Trees -Stochastic Search Methods.

#### UNIT III

##### Mining Data Streams:

Introduction To Streams Concepts –Stream Data Model and Architecture -Stream Computing -Sampling Data in a Stream –Filtering Streams –Counting Distinct Elements in a Stream – Estimating Moments –Counting Oneness in a Window –Decaying Window -Real time Analytics Platform(RTAP) Applications -Case studies -Real Time Sentiment Analysis, Stock Market Predictions.

#### UNIT IV

##### Frequent Item sets And Clustering:

Mining Frequent Item sets -Market Based Model –Apriori Algorithm –Handling Large data Sets in Main Memory –Limited Pass Algorithm –Counting Frequent Item sets in a stream –Clustering Techniques –Hierarchical –K-Means –Clustering High Dimensional Data –CLIQUE And PROCLUS –Frequent Pattern based Clustering Methods –Clustering in Non-Euclidean Space –Clustering for Streams and Parallelism.

#### UNIT V

##### Frameworks and Visualization:

Map Reduce – Hadoop, Hive, MapR –Sharding –No SQL Databases -S3 -Hadoop Distributed File Systems –Visualizations -Visual Data Analysis Techniques -Interaction Techniques; Systems and Analytics Applications -Analytics using Statistical packages-Approaches to

modeling in Analytics –correlation, regression, decision trees, classification, association-Intelligence from unstructured information-Text analytics-Understanding of emerging trends and technologies-Industry challenges and application of Analytics.

**Outcome:**

At the end of the course the student will be able to:

1. Analyze the real time data using any appropriate data analytic tools.
2. Evaluate the performance of Data Model used in big data.
3. Developing applications for Real time Analytics Platform
4. Apply different clustering techniques for forming clusters, analysis of outlier and formation of association.
5. Optimize the performance of a social network.

**TEXT BOOKS:**

1. *“Intelligent Data Analysis”*, Michael Berthold, David J. Hand, Springer, 2007.
2. *“Mining of Massive Datasets”*, Anand Rajaraman and Jeffrey David Ullman, Cambridge University Press, 2012.

**REFERENCE BOOKS:**

- 1 *“Taming the Big Data Tidal Wave: Finding Opportunities in Huge Data Streams with Advanced Analytics”*, Bill Franks, John Wiley & sons, 2012.
- 2 *“Making Sense of Data”*, Glenn J. Myatt, John Wiley & Sons, 2007
- 3 *“Data Mining Concepts and Techniques”*, Second Edition, Jiawei Han, MichelineKamber,Elsevier, Reprinted 2008.

*Mapping Course Outcomes with Programe outcomes*

Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1					✓							
CO2					✓							
CO3				✓								
CO4		✓				✓				✓		
CO5			✓				✓		✓		✓	✓



**Sri Venkateswara College of Engineering and Technology (Autonomous)  
Chittoor**

**14ACS40 SOFTWARE PROJECT MANAGEMENT  
(Common to CSE & IT)**

**IV B.Tech-I Semester(IT)**

**L T P C**

**3 1 - 3**

**Objectives:**

The objective of the course is to make students to:

1. Understand and practice the process of project management and its application in delivering successful projects.
2. Understand the evaluation of the project.
3. Gain knowledge about the artifacts and model based software architectures.
4. Gain knowledge about Future software project management.
5. Acquire knowledge in emerging trends in software Engineering

**UNIT I**

**Introduction to Software Project Management:**

Project Management Concepts: The management spectrum - People, The product, The process, The project; The W5HH principle, Critical Practices.

Process and Project Metrics: Introduction, Software measurement, Software quality metrics, integrating metrics within the software process, Metrics for small organizations.

**UNIT II**

**Project Evaluation:**

Strategic Assessment – Technical Assessment – Cost Benefit Analysis –Cash Flow Forecasting – Cost Benefit Evaluation Techniques – Risk Evaluation.

**UNIT III**

**Artifacts and Model Based Software Architectures:**

Artifacts of the process - the artifact sets, Management artifacts, Engineering artifacts, programmatic artifacts.

**Model based software architectures:** A Management perspective and technical perspective. Workflows of the process - Software process workflows, Iteration workflows.

**UNIT IV**

**Future Software Project Management:**

Modern Project Profiles, Next generation Software economics, modern process transitions.

**UNIT V:**

**Emerging Trends in Software Engineering:**

Technology evolution, Software engineering trends, Identifying soft trends, Technology directions, and Tools-related trends.

## Outcomes:

At the end of course, students should be able to:

1. Implement a project to develop the scope of work, provide accurate cost estimates and to plan the various activities.
2. Analyze the various artifacts of the process and technical perspectives.
3. Evaluate the resources required for a project and to produce a work plan and resource schedule.
4. Implement emerging trends in software engineering.
5. Apply various models for software architectures

## TEXT BOOKS:

1. “*Software Project Management*”, Walker Royce ,Pearson Education, 2005.
2. “*Software Project Management*”, Henrey,Pearson,2003.

## REFERENCE BOOKS:

1. *Software Project Management*, Bob Hughes, Mike Cottrell, Tata McGraw-Hill Edition, India, 2006.
2. “*Software Project Management: A Concise Study*”, S. A. Kelkar, PHI,2004.
3. “*Software Project Management*”, Second Edition, Hughes Cotterell, TMH,2009.

Mapping Course Outcomes with Programme outcomes

Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1		✓		✓								
CO2			✓									
CO3		✓										
CO4												✓
CO5								✓			✓	

# Sri Venkateswara College of Engineering and Technology (Autonomous)

## Chittoor

### 14ACS43 INTERNETWORKING WITH TCP/IP (Common to CSE & IT)

IV B.Tech I Semester(IT)

L T P C  
3 1 - 3

#### Objectives:

The objective of this course is to make students to:

1. Acquire the knowledge on different addressing schemes and enable to configure router and host routing tables.
2. Articulate the different routing techniques.
3. Differentiate the connection oriented and connectionless services over the Internet.
4. Analyze the different error control and congestion control techniques with appropriate networking protocols.
5. Understand advanced Internet Protocol concepts and file transfer concepts.

#### UNIT I

##### **The OSI Model and the TCP/IP Protocol suite:**

TCP/IP Protocol Suite, Addressing. Internet Protocol Version 4 (IPv4): Datagrams, Fragmentation, Options, Checksum.

**IPv4 Addresses:** Introduction, Classful Addressing, Classless Addressing, Special Addresses, NAT.

#### UNIT II

**Address Resolution Protocol (ARP):** Address Mapping, The ARP Protocol, ATM ARP, ARP PACKAGE. Internet Control Message Protocol Version 4: Introduction, Messages, Debugging Tools, ICMP Package.

**Unicast Routing Protocols (RIP, OSPE, and BGP):** Introduction, Intra- and Inter-Domain Routing, Distance Vector Routing, RIP, Link State Routing, OSPF, Path Vector Routing, BGP.

#### UNIT III

**User Datagram Protocol (UDP):** Introduction, User Datagram, UDP Services, UDP Applications, UDP Package.

**Transmission Control Protocol (TCP):** TCP Services, TCP Features, Segment, A TCP Connection.

#### UNIT IV

**Windows in TCP:** Flow Control, Error Control, Congestion Control, TCP Timers, Options, TCP Package.

#### UNIT V

**Remote Login:** TELNET and SSH:TELNET, Secure Shell (SSH).

**File Transfer:** FTP, TFTP.

**Internet Protocol Version 6:** Introduction, Advantages of IPv6, IPv6 Addressing Format, IPv6 Header, IPv6 Extension Headers, ICMPv6.

## Learning Outcomes:

At the end of the course the student will be able to:

1. Differentiate the different network architectures by comparing the basic network model.
2. Identify the networking , internetworking requirements and networking protocols.
3. Apply the requirements of routing and choose appropriate routing methods using appropriate modern tools.
4. Ascertain and handle the selection of applications and protocols for transferring data across the internet.
5. Analyze and control the passage of user information over the network by using appropriate network protocols.

## TEXT BOOKS:

1. *TCP/IP Protocol Suite*, Fourth Edition, Behrouz A Forouzan- TATA McGraw-Hill,1999.
2. *Introduction to Data Communications and Networking*, Wayne Tomasi, Pearson,2005.

## REFERENCES:

1. *Internetworking with TCP/IP*, Second Edition, Douglas E. Comer, Stevens, PHI,1996.
2. *TCP/IP Network Administration*, Third Edition, Craig Hunt, O'Reilly,1992.

*Mapping Course Outcomes with Progame outcomes*

Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	✓											
CO2		✓										
CO3					✓							
CO4										✓		
CO5									✓			

# Sri Venkateswara College of Engineering and Technology (Autonomous)

## Chittoor

### 14ACS41 WEB SERVICES

(Common to CSE & IT)

#### IV B.Tech-I Semester(IT)

L T P C

3 1 - 3

#### Objectives:

The objective of this course is to make students to:

1. Understand object-oriented programming concepts and apply them in C# program
2. familiarize with .Net Architecture
3. Learn the basic concepts to develop applications in C# & ASP.Net
4. Build a web application using .Net
5. Understand .NET framework components

#### UNIT I

##### Introduction to Web services

Business motivations of Web Services-B2B-B2C-Service Oriented Architecture(SOA)-Architecting Web Services-Web Services Technology stack-logical view-composition of web services-deployment view-from application server to peer to peer-process view-life in runtime

#### UNIT II

**Introduction to C#:** Introducing C#, Understanding .NET, Overview of C#, Literals, Variables, Data types, Expressions, Branching, Looping, Methods, Arrays, Strings, Structures, Enumerations.

#### UNIT III

**Object oriented aspects of C#:**Classes, Objects, Inheritance, Polymorphism, Interfaces, Operator Overloading, Delegates, Events, Errors and Exceptions.

#### UNIT IV

**Application Development on .NET:** Building Windows Applications, Accessing Data with ADO.NET

#### UNIT V

##### Web Based Application Development on .NET

Programming Web applications with Web Forms, Programming Web Services.

##### The CLR and the .NET Framework:

Assemblies, Versioning, Attributes, Reflection, Viewing Meta Data, Type Discovery, Reflecting on a type, Marshalling, Remoting, Understanding Server Object Types, Specifying a server with an Interface, Building a server, Building the Client, Using Single Call, Threads.

#### Outcomes:

At the end of the course the student will be able to:

1. Apply OOP Concepts through C#.
2. Design classes and objects in C#.
3. Design windows applications on .NET
4. Use .NET components in C# programs and develop web application.
5. Use .NET framework for elaborate and complex building web application.

**TEXT BOOKS:**

1. "Programming in C#: A Primer", 3<sup>rd</sup> edition, E. Balagurusamy, TMH, 2010.
2. "Developing Enterprise web Services: An Architect's guide, Sandeep chatterjee and James webber, Prentice hall, 2004

**REFERENCE BOOKS:**

1. "Programming in C#", 2<sup>nd</sup> Edition, J Liberty – O'Reilly, 2001.
2. "Learning Web App Development: Build Quickly with Proven JavaScript Techniques", Semmy Purewal, O'Reilly Media, February 2014.
3. "CLR via C#", Dreamtech Press, Fourth edition, June 2013.
4. "Beginning C# Object-Oriented Programming" 2<sup>nd</sup> edition, Dan Clark, A press, March 2013.

*Mapping Course Outcomes with Progame outcomes*

Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1		✓		✓								
CO2			✓									
CO3		✓										
CO4												✓
CO5								✓			✓	

**Sri Venkateswara College of Engineering and Technology (Autonomous)  
Chittoor**

**14AIT10      ADVANCED COMPUTER ARCHITECTURE**

**IV B.Tech I Semester(IT)**

**L T P C  
3 1 - 3**

**OBJECTIVES:**

The objective of this course is to make students to:

1. Understand the design of various computer architectures.
2. Evaluate the performance of memory module in computer system.
3. Analyse the need of heterogeneous multicore architectures.
4. Acquire knowledge about an application designed for multicore architectures using openMP.
5. Understand the process of Bench marking a processor.

**Unit I: CONTROL UNIT DESIGN**

Overview of IAS Computer, Data path implementation, Register Transfer Notation(RTN), Abstract RTN, Concrete RTN, Control sequence for Simple RISC computer (SRC);Control unit Design, Hardwired control unit Design and Micro programmed control unit, Design using control Sequences.

**Unit II: MEMORY MODULE DESIGN**

Conceptual view of memory cell, Memory address map, Memory connections to CPU,Cache memory- Cache memory management techniques, Types of cache's: Look-through, look aside, write through, write around, unified Vs Split, multilevel, cachelevels, Cache Misses, performance issues: Mean memory access time, Execution time,Cache Coherence Protocols, Snoopy, MSI, MESI, and MOESI.

**Unit III: MULTICOREARCHITECTURE**

Parallel computing and why it failed, Multi-processor architecture and its limitations,Need for multi-core architectures, Architecting with multi-cores, Homogenous andheterogeneous cores, Shared recourses, shared busses, and optimal resource sharingstrategies. Performance evaluation of multi-core processors, Error management.

**Unit IV: MULTITHREADING CONCEPTS**

Evolution of Multi-Core Technology, basic concepts of threading and parallel computing, Concurrency, Parallelism, threading design concepts for developing an application, Correctness Concepts: Critical Region, Mutual exclusion, Synchronization, Race Conditions, Performance Concepts: Simple Speedup, Computing Speedup, Efficiency, Granularity , Load Balance.

**Unit V: MULTICOREPROGRAMMING**

Introduction to OpenMP, OpenMP Directives, Parallel constructs, Work-sharing constructs, Data environment constructs, Synchronization constructs, Extensive API library for finer

control, benchmarking multi-core architecture: Bench marking of processors. Comparison of processor performance for specific application domains.

### OUTCOMES:

At the end of the course the student will be able to:

1. Develop a Micro routine for micro programmed control unit using appropriate modern tool.
2. Design the system for coordination of components in computer system.
3. Identify the performance issues with memory module in computer design.
4. Evaluate the Performance of multi-core processors.
5. Compare the performance of different processor for specific application domains.

### TEXT BOOKS:

1. Quantative Approach –Computer Architecture 5th edition, John L. Hennessy and David A. Patterson, Morgan Kaufmann, 2011.
2. Multi-Core Programming, 1st edition Shameem Akhter and Jason Roberts, IntelPress, 2006.

### REFERENCE BOOKS:

1. Computer System design and Architecture, 2<sup>nd</sup> edition, Vincent, P. Heuring, Harry F. Jordan, Pearson, 2003.
2. Programming Massively Parallel Processors: A Hands-on Approach (Applications of GPU Computing Series), 1st edition, David B. Kirk , Wen-mei W. Hwu, Morgan Kaufmann, 2010.

### Mapping of Cos with POs:

Course Outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1			✓				✓				✓	
CO2		✓										
CO3				✓					✓			
CO4	✓				✓		✓			✓		
CO5												



**Sri Venkateswara College of Engineering and Technology (Autonomous)  
Chittoor**

**14AEC45      EMBEDDED SYSTEMS LAB**

**IV B.Tech- I Semester(IT)**

**L T P C**

**- - 4 2**

**OBJECTIVES:**

1. To know the use of Microcontroller.
  2. To know about various scheduling techniques
  3. To know about various memory management techniques.
  4. To know how to design basic embedded systems
- 
1. Write a program to a) Clear the Register and b) Add 3 to Register Ten Times and Place the Result into Memory Use the Indirect Instructions to Perform Looping.
  2. To transfer the data serially between two microcontroller kit using RS232C.
  3. Write a program to use the **TIMER 0** as a counter
  4. Write a Program to monitor Door Sensor and when it Open, Sounds the Buzzer by sending a Square Wave of few Hundred Hz Frequency to it. A Door Sensor is connected to RB1 Pin and a Buzzer is connected to RB7.
  5. Write a Program to Toggle all the Bits of PORT B parts continuously with a 250ns delay.
  6. Write an Interfacing Program to blink LED.
  7. Write an Interfacing Program to blink LED in dancing fashion.
  8. Write an Interfacing Program for LCD
  9. Write a program to implement data transmission using serial mode.
  10. Write a program to implement data receiving using serial mode.

**OUTCOMES:**

1. Able to use microcontroller in various applications.
2. Able to design systems where serial communication requires.
3. Able to design simple embedded systems.
4. Able to know real time scheduling.

**Sri Venkateswara College of Engineering and Technology (Autonomous)  
Chittoor**

**14ACS45 CLOUD COMPUTING AND SOFTWARE TESTING LAB  
(Common to CSE & IT)**

**IV B. Tech-I Semester(IT)**

**L T P C  
- - 4 2**

**Objectives:**

1. To understand and implement cloud environment for storing, accessing and updating the data.
2. To learn basic applications for family and business management.
3. To manage free cloud storage services for regular usage.
4. To learn the basic concepts of software testing tools using win runner and selenium.
5. To build test cases for various applications.

**PART -A**

1. Implement the following in Cloud Environment
  - a) Storing the data
  - b) Accessing the data
  - c) Updating the data
2. Working on google drive to make spread sheets and notes.
3. Installation and configuration of drop box
4. Desktop synchronization with drop box.
5. Business management using cloud services.
6. Cloud mail services.
7. Cloud applications for Family.

**PART –B**

1. Write programs in ‘C’ Language to demonstrate the working of the following constructs:
  - i) do...while ii) while....do iii) if...else iv) switch v) for
2. “A program written in ‘C’ language for Matrix Multiplication fails” Introspect the causes for its failure and write down the possible reasons for its failure.
3. Take any system (e.g. ATM system) and study its system specifications and report the various bugs.
4. Write the test cases for any known application (e.g. Banking application)
5. Create a test plan document for any application (e.g. Library Management System)
6. Study of any testing tool (e.g. Win runner)
7. Study of any web testing tool (e.g. Selenium)
8. Study of any bug tracking tool (e.g. Bugzilla, bugbit)

9. Study of any test management tool (e.g. Test Director)
10. Study of any open source-testing tool (e.g. Test Link)
11. Take a mini project (e.g. University admission, Placement Portal) and executes it. During the Life cycle of the mini project create the various testing documents\* and final test report document.

**Outcomes.**

1. Understand the key dimensions of challenges of cloud computing.
2. Designing and implementing applications of cloud computing.
3. Able to analyze and implement practical cloud applications.
4. Understand the software development lifecycle in developing a software
5. Evaluating various testing tools

Mapping course outcomes with POs

Course outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
C01						✓						
C02			✓									
C03						✓						
C04								✓				
C05					✓							

# Sri Venkateswara College of Engineering and Technology (Autonomous)

Chittoor

## 14AMB02 PROFESSIONAL ETHICS

(Audit Course)

(Common to Civil, EEE, Mechanical, ECE, CSE, IT & Automobile Engg.)

IV B.Tech-I Semester(IT)

L T P C

3 - - -

### Objectives:

1. To understand the fundamental concepts of professional ethics.
2. To impart and inculcate ethical decision making.
3. To apply ethical and human values in engineering profession.
4. To prepare engineering students to meet global demands on human values.
5. To explain the importance of environmental protection in engineering activities.

### Unit-I Introduction

7

Professionalism-models of professionalism-Ethics-Types of ethics and morality-Engineering ethics-Positive and negative faces of ethics-Responsibility for safety-Technology pessimism and perils of technological optimism.

### Unit-II Ethical Concepts

12

Human Values – morals-integrity-work ethics-Respect for others-respect for authority-conflicts of interests-moral dilemmas-honesty- courage-cooperation-valuing time-commitment-collegiality-loyalty-self -interest-Professional accountability-royalty-Problem of bribery, extortion and grease payments-problem of nepotism, excessive gifts-confidentiality-uses of ethical theories-Kohlberg's Theory- Gilligan's Theory-Ethical codes of IEEE and Institution of Engineers –

### Unit III Engineers Role in Safety

10

Safety and risks-risk and costs-risk benefit analysis-Testing methods for safety-The promise of technology-Computer Technology Privacy-Social policy-Engineering standards-the standards care-Social and value dimensions of technology-communicating risk and public policy-occupational crime-professional rights and employee rights-whistle blowing`

### Unit IV Roles of Engineers

10

Engineers as managers, Advisors, Consultants, Experts and witnesses- Engineers role in industry and society- models of professional roles-Theories about right action-paternalism-different business practices-Moral leadership- Cases - Bhopal gas tragedy, Nuclear power plant disasters-

### Unit V Environmental Ethics

11

Global Issues-Multinational corporations-Living in harmony with NATURE-Holistic technology-Eco friendly production system-sustainable technology and development-weapon development-Four orders of living, their interconnectedness-Eco system-Ozone depletion-,pollution

## Outcomes:

After the completion of the course the students shall be able to

1. Understand human values and ethical standards to lead career accordingly.
2. Able to incorporate appropriate safety measures in designing systems.
3. Play the role of “responsible engineer” in the society.
4. Use natural resources in a sustainable manner and be conscious of environment.
5. Incorporate safety measures in engineering and product design aspects.

## Text Books

1. Subramanian R, Professional Ethics, 1<sup>st</sup> Edition, Oxford University Press. 2013.
2. Naagarazan , R.S., A Textbook on Professional Ethics and Human Values, 1<sup>st</sup> edition, New Age International (P) Limited, Publishers New Delhi. 2014

## Reference Books

1. Fundamentals of Ethics for scientists and Engineers, Edmond G Seebauer and Robert L. Barry, 1<sup>st</sup> edition Oxford University Press, 2008.
2. Human Values and Professional Ethics, R. R. Gaur, R. Sangal and G. P. Bagaria, Eecel Books, New Delhi. 2010.
3. Professional Ethics and Human Values – M. Govindrajan, S. Natarajan and V.S. Senthil Kumar, PHI Learning Pvt. Ltd. Delhi, 2013.
4. Professional Ethics and Human Values: Prof. D.R. Kiran, TATA McGraw Hill Education. 2007
5. “Engineering Ethics”, Charles D Fleddermann, Prentice Hall, 2011.
6. “Engineering Ethics, Charles E Harris, Micheal J Rabins, Cengage Learning, 1995

Mapping course outcomes with POs

Course outcomes	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1						✓						
CO2								✓				
CO3												
CO4										✓		
CO5												✓