



**S.V. UNIVERSITY COLLEGE OF ENGINEERING : TIRUPATI – 517502**  
**B.Tech (with effect from 2016-17)**

**Scheme of Instruction**

**Stream 1 : EEE, ECE, CSE**

**FIRST SEMESTER**

Course Code	Course Title	Instruction Hours per Week				Course Type	Credits
		Theory	Tutorial	Lab.	Total		
MAT01	Engineering Mathematics – I	3	2		5	Basic	4
CST01	Computer Programming	3	2		5	Basic	4
CET01	Environmental Studies	2	2		4	Basic	3
CET02	Basic Civil Engineering	3			3	Basic	3
MET02	Basic Mechanical Engineering	3			3	Basic	3
ENT01	English	3			3	Basic	3
CSP01	Computer Programming Lab			3	3	Basic	2
ENP01	English Communication Lab			3	3	Basic	2
		17	6	6	29		24

**SECOND SEMESTER**

Course Code	Course Title	Instruction Hours per Week				Course Type	Credits
		Theory	Tutorial	Lab.	Total		
MAT02	Engineering Mathematics – II	3	2		5	Basic	4
CST02	Data Structures	3	2		5	Basic	4
PHT01	Engineering Physics	3			3	Basic	3
CYT01	Engineering Chemistry	3			3	Basic	3
	Branch Subject	4			4		4
MET01	Engineering Graphics	2		3	5	Basic	4
CSP02	Data Structures Lab			3	3	Basic	2
MEP01	Workshop Practice			3	3	Basic	2
		18	4	9	31		26



**S.V. UNIVERSITY COLLEGE OF ENGINEERING : TIRUPATI – 517502**  
**B.Tech (with effect from 2016-17)**

**Scheme of Instruction**

**Stream 2 : CIVIL, MECHANICAL, CHEMICAL**

**FIRST SEMESTER**

Course Code	Course Title	Instruction Hours per Week				Course Type	Credits
		Theory	Tutorial	Lab.	Total		
MAT01	Engineering Mathematics – I	3	2		5	Basic	4
CST01	Computer Programming	3	2		5	Basic	4
CET01	Environmental Studies	2	2		4	Basic	3
PHT01	Engineering Physics	3			3	Basic	3
CYT01	Engineering Chemistry	3			3	Basic	3
MET01	Engineering Graphics	2		3	5	Basic	4
CSP01	Computer Programming Lab			3	3	Basic	2
MEP01	Workshop Practice			3	3	Basic	2
		16	6	9	31		25

**SECOND SEMESTER**

Course Code	Course Title	Instruction Hours per Week				Course Type	Credits
		Theory	Tutorial	Lab.	Total		
MAT02	Engineering Mathematics – II	3	2		5	Basic	4
CST02	Data Structures	3	2		5	Basic	4
EET01	Basic Electrical Engineering	3			3	Basic	3
ECT01	Basic Electronics Engineering	3			3	Basic	3
	Branch Subject	4			4		4
ENT01	English	3			3	Basic	3
CSP02	Data Structures Lab			3	3	Basic	2
ENP01	English Communication Lab			3	3	Basic	2
		19	4	6	29		25



**S.V. UNIVERSITY COLLEGE OF ENGINEERING : TIRUPATI – 517502**

**4-Year B.Tech Degree Programme**

**MAT01 Engineering Mathematics – I**

**Instruction Hours / Week : 5**

**Credits: 4**

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**Common to all branches and with effect from 2016-17**

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**Course Objectives:**

1. The emphasis is primarily on the development of analytical techniques.
2. To make students familiar with Differential Equations and its solutions.
3. To provide the basic knowledge in transformations and in particular Laplace transforms
4. Expansions of functions as a power series
5. Roll's and Mean value theorems and maxima, minima
6. Curve tracing and Evaluation of Multiple Integrals

**Syllabus**

**Unit – 1**

Differential Equations: Linear differential equations of second and higher order with constant coefficients - particular integrals - homogeneous differential equations with variable coefficients - method of parameters - simulation equations.

**Unit – 2**

Laplace Transforms I: Laplace transforms of standard functions - inverse transforms -transforms of derivatives and integrals - derivatives of transforms-integrals of transforms.

**Unit – 3**

Laplace Transforms II: Transforms of periodic functions - convolution theorem - applications to solution of ordinary differential equations.

**Unit – 4**

Calculus: Roll's and Mean value theorems - Taylor's and Maclaurins's series - maxima and minima for functions of two variables - Infinite series - Convergence Tests series of positive terms - comparison, Ratio tests - Alternating series - Leibnitz's rule - Absolute and conditional convergence.

## Unit – 5

Multiple Integrals: Curve tracing (both Cartesian and polar coordinate) - Evaluations of double and Triple integrals - change of order of integrations - change of variables of integrations - simple applications to areas and volumes.

### **Text Books:**

1. B S Grewal, Higher Engineering Mathematics, 40<sup>th</sup> Edition, Khanna Publications, 2007.
2. M K Venkataraman, Engineering Mathematics, National Publishing Company, Chennai.
3. B V Ramana, Higher Engineering Mathematics, 6<sup>th</sup> Reprint, Tata McGraw-Hill, 2008.
4. Bali and Iyengar, Engineering Mathematics, 6<sup>th</sup> Edition, Laxmi Publications, 2006.

### **Course Outcomes:**

1. Extends an ability to analyze differential equations and solve them
2. The students become familiar with the applications of differential equations to engineering problems.
3. In Mathematics, a transform is usually a device that converts one type into another type presumably easier to solve.
4. Use shift theorems to compute the Laplace transform, inverse Laplace transform and the solutions of second order, linear equations with constant coefficients.
5. Solve an initial value problem for an n<sup>th</sup> order ordinary differential equation using the Laplace transform.
6. Expand functions as power series using Maclaurin's and Talor's series
7. The problems in OR, Computer science, Probability, statistics deals with functions of two or more variables. To optimize something means to maximize or minimize some aspects of it.
8. Curve tracing is an analytical method of drawing an approximate shape by the study of some of its important characteristics such as symmetry, tangents, regions etc it is useful in applications of finding length, area, volume.
9. Multiple integral is a natural extension of a definite integral to a function of two, three variables and are useful in evaluating area and volume of any region bounded by the given curves.



S.V. UNIVERSITY COLLEGE OF ENGINEERING : TIRUPATI – 517502

## 4-Year B.Tech Degree Programme

### CST01 Computer Programming

Instruction Hours / Week : 5

Credits: 4

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Common to all branches and with effect from 2016-17

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#### Prerequisites:

1. There are no prerequisites for this course, except that anyone who wants to learn C as well as should have analytical skills and logical reasoning.

#### Course Objectives:

1. This course starts from the basics of program development.
2. To understand the various steps in Program development
3. It covers various concepts of C and C++ programming languages
4. To learn how to write modular and readable C Programs
5. To understand the basic concepts such as Abstract Data Types, Linear and Non Linear Data structures.
6. To understand the notations used to analyze the Performance of algorithms.
7. It introduces searching and sorting algorithms
8. To understand and analyze various searching and sorting algorithms

#### Syllabus

##### UNIT – I

**Introduction to Programming** – Problem Solving Steps, SDLC, Algorithms, and flow charts.

**Common features of C and C++ Programming Languages** – Identifiers, Variables, Constants, data types, Operators and Expressions, Input / Output operations. Statements- Decision Making, Branching and Looping, continue, go to and break. Precedence and Associativity, Expression Evaluation, Type conversions. C and C++ Simple Programming examples

##### UNIT – II

**Arrays and Strings** – Concepts, arrays, one and two and multidimensional arrays. Strings Handling: String Input / Output functions, arrays of strings, string manipulation functions, data conversion, C and C++ Simple Programming examples

**Designing Structured Programs-** Functions- basics, functions, Scope, Storage classes- auto, register, static, extern, scope rules, type qualifiers, recursion, Preprocessor directives.

**Derived types** – Structures – Declaration, definition and initialization of Structures, accessing structures, nested structures, arrays of structures, structures and functions, pointers to structures, self referential structures, unions, typedef, bit fields, enumerated types. C and C++ Simple Programming examples

### UNIT – III

**Pointers** – Introduction, Pointers for inter function communication, pointers to pointers, compatibility, memory allocation functions, array of pointers, pointers to void, pointers to functions, command –line arguments. C and C++ Simple Programming examples

**Data File Handling:** Input and Output – Concept of a file, streams, standard input / output Functions, formatted input / output functions, text files and binary files, file input / output operations, file status functions (Eq.error handling), C and C++ Simple Programming examples.

**Dynamic Memory Allocation:** Allocating a Block and Multiple Blocks, releasing the used space and altering memory size. C and C++ Simple Programming examples

### UNIT – IV

**Basics of Object Oriented Programming (OOP) and C++:** Benefits of OOP, data types, declarations, expressions and operator precedence, scope of variables

**Introduction to OOP and Concepts:** Abstraction, Data hiding, Encapsulation Classes and objects, Constructors & Destructors, Operator overloading & type conversions.

**Polymorphism:** Pointers, virtual functions and polymorphism- pointers to objects, this pointer, pointers to derived classes, virtual and pure virtual functions, C++ Simple Programming examples

### UNIT – V

**Inheritance:** Derived classes, syntax of derived classes, making private members inheritable, single, multilevel, multiple, hierarchical, hybrid inheritance.

**Templates, Exception handling, console I/O and File I/O:** class templates, Function templates, member function templates, exception handling, managing console I/O operations, working with files. Programming guide lines and Simple C++ Programming examples

### **TEXT BOOKS:**

1. Scheldt H, C: The Complete Reference, 4th Edition, Tata McGraw-Hill, 2002.
2. Balagurusamy E, Programming in ANSI C, 4th Edition, Tata McGraw-Hill, 2008
3. Robert Lefore, Object Oriented Programming in C++, 4<sup>th</sup> edition, PEARSON Education
4. Scheldt H , C++ : The Complete Reference, Tata McGraw-Hill

### **REFERENCES:**

1. C Programming with problem solving, J.A. Jones & K. Harrow, dreamtech Press
2. Programming in C – Stephen G. Kochan, III Edition, Pearson Eductaion.

3. C for Engineers and Scientists, H.Cheng, Mc.Graw-Hill International Edition
4. Data Structures using C – A.M.Tanenbaum, Y.Langsam, and M.J.Augenstein, Pearson Education / PHI
5. C Programming & Data Structures, P. Dey, M Ghosh R Thereja,Oxford University Press
6. C & Data structures – E V Prasad and N B Venkateswarlu, S.Chand & Co
7. Kernighan and Ritchie, The C programming language (2<sup>nd</sup> edition). Prentice Hall of India, 1988.
8. Coohoon and Davidson, C++ Program Design: An introductionto Programming and Object-Oriented Design. Tata McGraw Hill3rd edition. 2003.
9. G. Dromey, How to Solve it by Computer, Prentice-Hall Inc.,Upper Saddle River, NJ, 1982.Yashwant Kanetkar, Let's C, Allied Publishers, 1998.
10. Programming in C, PradipDey, ManasGhosh, Second Edition, OXFORD

**Course Outcomes:**

1. Able to design the flowchart and algorithm for real world problems
2. Able to learn and understand new programming languages
3. Able to construct modular and readable programs
4. Able to write C and C++ programs for real world problems using simple and compound data types
5. Adapt programming experience and language knowledge to other programming language contexts
6. Good programming style, standards and practices during program development

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

1. Develop C and C++ programs for computing and real life applications using basic elements like control statements, arrays, functions, pointers and strings; and data structures like stacks, queues and linked lists. Managing classes and Objects
2. Implement searching and sorting algorithms



S.V. UNIVERSITY COLLEGE OF ENGINEERING : TIRUPATI – 517502

## 4-Year B.Tech Degree Programme

### CET01 Environmental Studies

Instruction Hours / Week : 4

Credits: 3

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Common to all branches and with effect from 2016-17

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#### Course Educational Objective (CEOs):

1. To Impart basic knowledge about the environment and its allied problems
2. To apply knowledge in Economic development without destroying the environment
3. To have knowledge on renewable energy and non renewable energy sources
4. To know about the bio diversity and its concepts

#### Syllabus

##### Unit I Environmental Studies and Natural Resources

Definition, Scope and importance of Environment, Environmental studies, Need for public awareness

**Components of Environment-** Atmosphere, Hydrosphere, Lithosphere.

##### **Renewable and Non Renewable Resources and associated problems**

- Water resources: Use and over utilization of surface and ground water, floods, drought, conflicts over water, dams benefits and problems.
- Forest resources: Use and over exploitation, deforestation, case studies. Timber extraction, mining, dams and their effects on forests and tribal people.
- Land resources: Land as a resource, land degradation, Man induced landslides, soil erosion and desertification.
- Mineral resources: Use and overexploitation, Environmental effects of extracting and using mineral resources, case studies.
- Food resources: World food problems, changes caused agriculture and overgrazing, effects of modern agriculture, fertilizer – pesticide problems, water logging, salinity, Case studies.
- Energy resources: Growing energy needs, renewable and non renewable energy sources, use of alternate energy sources. Case studies.
- Role of an individual in conservation of natural resources.



## **Unit II Ecosystem and Biodiversity :**

### **Ecosystem - Concept of an ecosystem.**

1. Structure and functions of an ecosystem.
2. Producers, consumers and decomposers.
3. Energy flow in the ecosystem.
4. Ecological succession.
5. Food chains, food webs and ecological pyramids.
6. Introduction, types, characteristic features, structure and function of the following ecosystem.  
(a) Forest ecosystem. (b) Grassland ecosystem  
(c) Desert ecosystem. (d) Aquatic ecosystem (ponds, streams, lakes, rivers, oceans, estuaries )

### **Biodiversity and its conservation:**

- Definition, genetic species and ecosystem diversity.
- Biogeographically classification of India.
- Value of biodiversity: consumptive use, productive use, social, ethical, aesthetic and option values.
- Biodiversity at global, National and local levels.
- India as a mega-diversity nation.
- Hot-spots of biodiversity.
- Threats to biodiversity: habitat loss, poaching of wildlife, man – wildlife conflicts.
- Conservation of biodiversity: in-situ and ex-situ conservation of biodiversity.

## **Unit III Environmental pollution and Global Effects.**

- Definition, Causes, Effects, and control measures of (a) Air pollution (b) Water pollution (c) Soil pollution (d) Marine pollution (e) Noise pollution (f) Thermal pollution (g) Nuclear hazards
- Solid waste Management: Causes, effects and control measures of urban and industrial wastes.
- Role of an individual in prevention of pollution.
- Pollution case studies.
- Disaster management: Floods, earthquakes, cyclone, landslides, Tsunami.
- Climate change-Global warming, Acid rain, Ozone depletion,.

## **Unit IV Environment Issues and Management**

- Environment and Human health – Epidemic diseases, HIV/AIDS, Avian Flu, Water Borne Diseases.
- Environmental Impact Assessment, Sustainable Development, Clean Production and Clean Development Mechanisms
- Environment Legislation: Environmental Protection Act, Water Act, Air Act, Wild Life Protection Act, Forest Conservation Act, Public Liability & Insurance Act, Issues involved in Enforcement of Environmental legislation.

## **Unit V Social Issues and the Environment**

- Population growth, Population Explosion, Population Control, Women and Child welfare.
- Urbanization, Industrialization, Development projects, Resettlement and

Rehabilitation of people – Problems concerned, Case studies.

- Consumerism and Waste Products Conservation, Public Awareness, Water Conservation, Rain water harvesting, watershed management, Wasteland reclamation, Human Rights, Value education, Environmental ethics- Issues and possible solution.
- Role of information Technology in Environment and Human Health.

- Text books :**
1. Anubha Kaushik & C P Kaushik, Environmental studies, New age International Publishers, 2008
  2. Benny Joseph, Environmental studies, Tata McGraw-Hill Publishers, 2005
  3. M Chandra Sekhar, Environmental Science, Hi-Tech Publishers, 2004
  4. Keerthinarayana and Daniel Yesudian, Principles of Environmental Sciences and Engineering , Hi-Tech Publishers, 2005
  5. Amal K.Datta, Introduction to Environmental Science and Engineering, Oxford & IBH Publishing Co.Pvt.Ltd, 2000
  6. Santhosh kumar Garg,Rajeshawri Garg and Rajni Garg, Ecological and Environmental studies, Khanna publishers, 2006

- Reference books:**
1. Gilbert M, Introduction to Environmental Engineering and Science, Masters Publication by Prentice –Hall of India Private Ltd., 1991
  2. William P Cunningham and Mary Ann Cunningham, Principles of Environmental Science, Tata McGraw Hill Publishing Co.Ltd, 2002

### **Course Outcomes:**

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

1. Acquire knowledge in
  - Diverse components of environment and natural resources
  - Ecosystem and biodiversity & its conservation methods
  - Population growth and human health
  - Green technology
2. Identify and resolve the issues related to sources of different types of pollutions
3. Provide solutions to individuals, industries and government for sustainable development of natural resources
4. Apply environmental ethics in protection of diversified ecosystems.



**S.V. UNIVERSITY COLLEGE OF ENGINEERING : TIRUPATI – 517502**

**4-Year B.Tech Degree Programme**

**CET02 Basic Civil Engineering**

**Instruction Hours / Week : 3**

**Credits: 3**

**Common to EEE, ECE, CSE branches and with effect from 2016-17**

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**Course Objectives:**

1. To provide basic knowledge on different elements of civil engineering
2. To gain knowledge in various materials used for construction.
3. To become skilled at various aspects of surveying
4. To be familiar with the particulars of environmental concepts

**Syllabus**

**UNIT I : CIVIL ENGINEERING MATERIALS**

Introduction to materials – Timber, Cement, Steel, Bricks, Rocks & Stones, Tiles, Ceramics, glass, Paints, Varnishes and Distempers  
Mixes: Mortars, Concrete

**UNIT II: ELEMENTS OF BUILDING CONSTRUCTION**

Types of buildings, Functional requirements of a building, principles of planning of a building, brick masonry, floors and floorings, Doors and windows, stairs, roofs, types of foundation, failure of foundations and remedial measures.

**UNIT III: SURVEYING**

Objective of Surveying, Types of surveying, classification of surveying, principles of surveying, measurement of distance, measurement of distance, measurement of angles, leveling, determination of Areas and volumes

Basic principles and applications of remote sensing, Global positioning systems (GPS), Geographical Information System (GIS)

**UNIT IV: TRANSPORTATION ENGINEERING**

Roads: Introduction, Road transport characteristics, Benefit of a good system of roads, classification of roads.

Bridges: Necessity of bridges, site investigation, components of a bridge, classification of bridges.

**UNIT V: WATER RESOURCES & ENVIRONMENTAL ENGINEERING**

Water resources- quality and quantity, water quality standards for drinking and construction- Irrigation and types – crop seasons-Types of crops, reservoirs and types-rain water harvesting

**TEXT BOOKS:**

1. ELEMENTS OF CIVIL ENGINEERING, Edition: 3rd Edition : 2015, AnuragA.Kandya
2. S.S. Bhavikatti , BASIC CIVIL ENGINEERING, Vikas Publishing House Pvt Limited, 2004
3. Palanichamy M S, Basic Civil Engineering, 3rd Edition, Tata McGraw-Hill, 2000

**REFERENCE BOOK:**

1. Gopi S, Basic Civil Engineering, Pearson Education, 2010

**Course Outcomes:**

On completion of the course, the students will be able to:

1. To find the suitability of various building materials at a particular location in the building construction.
2. Take accurate measurements, field booking, plotting and adjustment of errors can be understood
3. Analyze the status of water quality standards for drinking and construction
4. Classify the roads and bridges



**S.V. UNIVERSITY COLLEGE OF ENGINEERING : TIRUPATI – 517502**

**4-Year B.Tech Degree Programme**

**MET02 Basic Mechanical Engineering**

**Instruction Hours / Week : 3**

**Credits: 3**

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**Common to EEE, ECE, CSE branches and with effect from 2016-17**

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**Course Objectives:**

1. To give overall picture of mechanical engineering from the point of view of basic concepts.
2. To learn about basic laws of thermodynamics.
3. To give insight into IC engines, steam engines, and steam turbines, gas turbines.
4. To make known the basic manufacturing processes and machine tools.
5. To learn about power transmission devices.

**Syllabus**

**UNIT – I**

Introduction to Thermodynamics – Concept of a system – Types of Systems, Thermodynamic Equilibrium – Properties, State, Process and Cycle, Zeroth Law, Energy Interactions – Heat and work, Types of work.

First and Second Laws of Thermodynamics : First law, Cycle and process, Specific heats, Heat interactions in a closed system for various processes, Limitations of First law, Concept of Heat Engine (H.E.) and reversed heat engine (Heat pump and refrigerator) , Efficiency/COP, Second Law: Kelvin – Plank and Clausius Statements , Carnot Cycle, Carnot Efficiency, Property of Entropy – T- S and P – V diagrams

**UNIT – II**

Thermal Power Plant: Thermal power plant layout – Four circuits – Rankine cycle, Boilers: Fire tube Vs Water Tube; BobCock and Wilcox, Cochran Boilers, Steam Turbines, Impulse Vs. Reaction Turbines, Compounding of Turbines.

**UNIT – III**

Internal Combustion Engines (IC): I.C. 2 – Stroke and 4 – Stroke engines – S.I. engines and C.I. engines – Differences Heat transfer – Modes – Thermal resistance concept, Conduction, Composite walls and Cylinders. Combined Conduction and Convection – Overall Heat transfer Coefficient, Simple Numerical Problems in Heat transfer.

## **UNIT – IV**

Manufacturing Processes : Engineering Materials ; Classification , Properties of materials, Metal Casting, Moulding, Patterns, Hot working and Cold working , Extrusion, Forging, Rolling and Drawing.

Machine Tools and Machining Processes – Lathe Machines and Lathe operations, Milling machines, Types – Milling operations , Shaper, Planer, Drilling and Grinding machines.  
Welding – Gas welding, Arc Welding, Soldering and Brazing

## **UNIT – V**

Power Transmission – Transmission of Mechanical Power, Belt drives, Simple Numerical Problems, Gear Drives – Simple Numerical Problems

Basics of Automotive vehicle – Brakes – Types - Clutch and Differential.

### **Text Books:**

1. Mathur, M.L., Mehta F.S. and Tiwari R.P., Elements of Mechanical Engineering, Jain Brothers, New Delhi, 2011.
2. Roy K.P. and HazraChowdary, S.K., Elements of Mechanical Engineering, Media Promoters and Publishers Pvt., Ltd, 2002.
3. Rudramoorthy R., Thermal Engineering, Tata McGrawHill Book Company, New Delhi, 2003.
4. HazraChowdary, S.K., and Bose, Workshop Technology , Vol. I and II, Media Promoters and Publishers Pvt. Ltd., 2002.

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

1. Understand basics of thermodynamics and components of thermal plant
2. Identify engineering materials and their properties, manufacturing methods encountered in engineering practice.
3. Understand basics of heat transfer, refrigeration and internal combustion engines.
4. Understand mechanism of power transfer through belt, chain, rope and gear drives.
5. Understand functions and operations of machine tools including milling, grinding, and shaping machines.



**S.V. UNIVERSITY COLLEGE OF ENGINEERING : TIRUPATI – 517502**

**4-Year B.Tech Degree Programme**

**ENT01 English**

**Instruction Hours / Week : 3**

**Credits: 3**

**Common to all branches and with effect from 2016-17**

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**Course Objectives:**

1. To introduce students elements of grammar and composition of English language.
2. To familiarize students with literary texts such as short stories and prose passages.
3. To maintain linguistic competence through training in vocabulary, sentence structures and pronunciation.
4. To develop communication skills by cultivating the habit of reading comprehension passages.
5. To train the students to develop the language skills like listening, speaking, reading and writing.
6. To initiate them into use of self-instructed learner friendly modes of language learning through competence.

**Syllabus**

Unit-I Effective Communication: Role and Importance of Communication, Features of Human Communication, Process of Communication, Interpersonal Communication, Barriers, Types- Verbal, Non-Verbal.

Unit-II Grammar: Articles, prepositions, tenses, reported speech, idioms and phrases

Unit-III Listening Skills: Process of Listening, Tips for Effective Listening,  
Speaking Skills: Basics of Spoken English, English Sounds, Rhythm and Intonation  
Telephonic Skills, Group Communication  
Reading Skills: Developing Reading Skills, Reading Strategies, Reading Comprehension,  
Writing Skills: Paragraph Writing, Essay Writing, E-writing, Job applications, , Reports. Resume and Letter Writing.

Unit-IV

Soft Skills: Team Work Skills, Interview Skills, Problem- Solving Skills Adoptability Skills, Presentation Skills and Group Discussions.

Unit- V Stories from Delight and Wisdom (An Anthology of Short Stories)

1. The Gift of Magi By O. Henry

2. The Diamond Necklace by Guy De Maupassant
3. My Brother, My Brother by Norah Burke
4. The Open Window by Saki
5. The Child by Premchand

**Text Books:**

1. Oxford guide to Effective writing and Speaking by John Seely, Oxford University Press, 2013, ISBN- 978-0-19-871393-7
2. Delight and Wisdom published by Orient Blackswan, 2009, ISBN: 978-81-250-3716-3

**Reference Books:**

1. David Green, Structure and Composition in English, Macmillan Publishers India Limited.
2. Communicative English by E. Suresh Kumar, P. Sreehari, Orient BlackSwan, 2009. ISBN: 13:9788125032502
3. English and Soft Skills by S P Dhanavel published by Orient Blackswan, 2013. ISBN 9788125039808
4. Personality Development and Soft Skills by Barun K. Mitra published by Oxford University Press. 2012. ISBN : 13:97280198066217

**Course Outcomes:**

1. Student will be able to get a thorough knowledge of various topics of grammar of English language.
2. Student will be trained in close reading of language and its relation to literary form.
3. Student will be able to read English correctly with focus on fluency and pronunciation.
4. Student will be able to understand the use of English through computer software.
5. Student will be in a position to face computer based competition exams like TOEFL.
6. They will get an ability to communicate effectively and to write accurately using English language.





**4-Year B.Tech Degree Programme**

**CSP01 Computer Programming Lab**

**Instruction Hours / Week : 3**

**Credits: 2**

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**Common to all branches and with effect from 2016-17**

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**Course Objectives:**

1. To work with the compound data types
2. To explore dynamic memory allocation concepts
3. Able to design the flowchart and algorithm for real world problems
4. Able to write C and C++ programs for real world problems using simple and compound data types
5. Employee good programming style, standards and practices during program development

**Syllabus**

- 1. C and C++ Programming Languages shall be used for Implementation of the following Programs.**
- 2. The following List is not exhaustive, The instructor changes the problems and number of programs for continuous evaluation Teaching Learning Process**

- Week-1**
- 1) Write a C program to make the following exchange between the variables a -> b -> c->d -> a
  - 2) Write a C program to carry out the arithmetic operations addition, subtraction, multiplication, and division between two variables
  - 3) Write a C program for printing prime numbers between 1 and n.

- Week-2**
- 1) Write a C program to construct a multiplication table for a given number.
  - 2) Write a program to reverse the digit of a given integer.
  - 3) Write a C program to find the sum of individual digits of a positive integer.
  - 4) Write a C program to calculate the factorial of a given number

- Week-3**
- 1) 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.
  - 2) Write a program to calculate tax, given the following conditions:
    - a) If income is less than 1, 50,000 then no tax.
    - b) If taxable income is in the range 1,50,001 – 300,000 then charge 10% tax
    - c) If taxable income is in the range 3,00,001 – 500,000 then charge 20% tax
    - d) If taxable income is above 5,00,001 then charge 30% tax

**Week-4**

Write a program to print the calendar for a month given the first Week- day of the month.

Input the first day of the month (Sun=0,Mon=1,Tue=2,Wed=3,.....) :: 3

Total number of days in the month : 31

Expected output

<i>Sun</i>	<i>Mon</i>	<i>Tue</i>	<i>Wed</i>	<i>Thu</i>	<i>Fri</i>	<i>Sat</i>
-	-	-	1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
25	26	27	28	29	30	31

**Week-5**

- 2) Write a C program to find the roots of a quadratic equation
- 1) Write a program to print the Pascal triangle for a given number
- 2) Write a C program to find the GCD (greatest common divisor) of two given integers
- 3) Write a C program to construct a pyramid of numbers.
- 4) Write C code to define a function cash\_dispense, which takes an amount as its input, and returns the number of 1000, 500, 100, 50, 20, 10, 5, 2, 1 rupee denomination that make up the given amount

**Week-6**

- 1) Write C code to reverse the contents of the array. For example, [1,2,3,4,5] should become [5,4,3,2,1]
- 2) Write a C program that uses functions to perform the following:
  - i) Addition of Two Matrices
  - ii) Multiplication of Two Matrices
- 3) Write a program that will search and find out the position where the given key element exist in a user chosen array and print it as output.

**Week-7**

- 1) Write C code to compute the frequency table of survey responses given by 20 users. The survey responses range from 1 to 5 and are stored in an array. For example, 10 responses are stored in the array [1,1,5,2,3,3,5,5,2,2]. The frequency table will be as shown below:
  - a. 1 = 2
  - b. 2 = 3
  - c. 3 = 2
  - d. 4 = 0
  - e. 5 = 3

- 2) Write a program to define a function to sort an array of integers in ascending order by using exchange sort.

**Week-8**

- 1) Write a C program to check whether a given string is a palindrome or not, without using any built-in functions.
- 2) Write a C program to determine if the given string is a palindrome or not by using string functions.
- 3) Write a function that accepts a string and delete the first character.
- 4) Write a function that accepts a string and delete all the leading spaces.

- Week-9** Write a program to accept a string from user and display number of vowels, consonants, digits and special characters present in each of the words of the given string.
- Week-10**
- 1) Write a C program to define a union and structure both having exactly the same numbers using the sizeof operators print the sizeof structure variables as well as union variable
  - 2) Declare a structure *time* that has three fields *hr, min, secs*. Create two variables, *start\_time* and *end\_time*. Input their values from the user. Then while *start\_time* is not equal to *end\_time* display GOOD DAY on screen.
- Week-11**
- 1) Write a program to read in an array of names and to sort them in alphabetical order. Use sort function that receives pointers to the functions *strcmp*, and *swap*, sort in turn should call these functions via the pointers.
  - 2) Write a program to read and display values of an integer array. Allocate space dynamically for the array using the *malloc()*.
  - 3) Write a program to calculate area of a triangle using function that has the input parameters as pointers as sides of the triangle.
- Week-12**
- 1) Two text files are given with the names *text1* and *text2*. These files have several lines of text. Write a program to merge (first line of *text1* followed by first line of *text2* and so on until both the files reach the end of the file) the lines of *text1* and *text2* and write the merged text to a new file *text3*.
  - 2) Write a program to split a given text file into *n* parts. Name each part as the name of the original file followed by *.part<n>* where *n* is the sequence number of the part file.

#### Reference Books:

1. Computer Science, A Structured Programming Approach Using C by Behrouz A. Forouzan & Richard F. Gilberg, Third Edition, Cengage Learning
2. C Programming A Problem-Solving Approach, Behrouz A. Forouzan & E.V. Prasad, F. Gilberg, Third Edition, Cengage Learning
3. Programming with C RemaTheraja, Oxford
4. "C Test Your Skills", Kamthane, Pearson Education
5. Programming in C: A Practical Approach, Ajay Mittal, Pearson
6. Problem solving with C, M.T.Somasekhara, PHI
7. C Programming with problem solving, J.A. Jones & K. Harrow, Dreamtech Press
8. Programming with C, Byron S Gottfried, Jitender Kumar Chhabra, TMH, 2011

#### Course Outcomes:

1. Able to have fundamental concept.
2. Able to write, compile and debug programs in C language.
3. Able to formulate problems and implement algorithms in C.
4. Able to effectively choose programming components that efficiently solve computing problems in real-world.
5. Able to use different data types in a computer program.
6. Able to design programs involving decision structures, loops and functions.



**S.V. UNIVERSITY COLLEGE OF ENGINEERING : TIRUPATI – 517502**

**4-Year B.Tech Degree Programme**

**ENP01 English Communication Lab**

**Instruction Hours / Week : 3**

**Credits: 2**

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**Common to all branches and with effect from 2016-17**

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**Course Objectives:**

1. To enable students to use language software.
2. To make them aware of western accents.

**Syllabus**

At least twenty exercises covering the topics: Stress, Introduction, Accent, Intonation, English vs Hinglish and Important Skills using Computer-Aided Packages.

**Text Book:**

1. Barry Tomalin and Suhashini Thomas, International English for Call Centres, McMillan Publishers, India Limited, 2009.

**Course Outcomes:**

1. Students gain felicity in using language software.
2. They are exposed to different accents of the language.



**S.V. UNIVERSITY COLLEGE OF ENGINEERING : TIRUPATI – 517502**

**4-Year B.Tech Degree Programme**

**MAT02 Engineering Mathematics – II**

**Instruction Hours / Week : 5**

**Credits: 4**

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**Common to all branches and with effect from 2016-17**

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**Course Objectives:**

1. Rank of a matrix, Eigen values, Eigen vectors- Cayley Hamilton theorem- Quadratic forms- diagonalization
2. Gradient of a scalar, Divergence, Curl of a vector and related properties- line, surface, volume integrals Green's, Stokes' and Gauss divergence theorems and its applications.
3. Fourier Series- Harmonic analysis
4. Gamma and Beta Functions
5. Bessel function and Legendre Polynomials

**Syllabus**

**Unit – 1**

Matrices: rank of a matrix-solution of system of linear equations-eigen values,vectors-cayley-hamilton theorem-quadratic forms-diagonalization.

**Unit – 2**

Vector Calculus: Gradient, Divergence, Curl of a vector and related properties - line, surface, volume integrals - Green's, Stokes's and Gauss Divergence theorems and its applications.

**Unit – 3**

Fourier Series: Fourier series-even and odd functions, periodic functions-half range sine and cosine series-harmonic analysis.

**Unit – 4**

Special Functions I: Gamma and Beta functions-series solutions of differential equations-ordinary points.

## Unit – 5

Special Functions II: Bessel function - recurrence formulae - generating function for  $J_n(X)$ - Legendre polynomials - recurrence formulae - generating function for  $P_n(X)$  - Rodrigue's formula - orthogonality of Legendre polynomials.

### Text Books:

1. B S Grewal, Higher Engineering Mathematics, 40<sup>th</sup> Edition, Khanna Publications, 2007.
2. M K Venkataraman, Engineering Mathematics, National Publishing Company, Chennai.
3. B V Ramana, Higher Engineering Mathematics, 6<sup>th</sup> Reprint, Tata McGraw-Hill, 2008.
4. Bali and Iyengar, Engineering Mathematics, 6<sup>th</sup> Edition, Laxmi Publications, 2006.

### Course Outcomes:

1. Use ranks of matrices to decide whether the system of linear equations is consistent or not and hence solve.
2. Use Cayley-Hamilton theorem to find inverses or powers of matrices.
3. Use Eigen values and vectors to reduce Quadratic forms to normal form.
4. Ability to analyze motion problems from real lines to curves and surfaces in 3-D. Use tools such as divergence and curl of vector and gradient, directional derivatives that play significant roles in many applications.
5. To use Green's theorem to evaluate line integrals along simple closed contours on the plane
6. To use Stokes' theorem to give a physical interpretation of the curl of a vector field
7. To use the divergence theorem to give a physical interpretation of the divergence of a vector field.
8. Find the Fourier series representation of a function of one variable. It is representation of a function as a series of constants times sine and cosine functions of different frequencies in order to see periodic phenomenon have long fascinating mankind.
9. Evaluation of certain improper integrals is made simple with introduction of Gamma and Beta functions
10. Primary motivation for studying certain special functions is that they arise in solving certain ordinary differential equations that model many physical phenomenon. They constitute necessary items in the toolkit of anyone who wishes to understand the work with such models.



S.V. UNIVERSITY COLLEGE OF ENGINEERING : TIRUPATI – 517502

## 4-Year B.Tech Degree Programme

### CST02 Data Structures

Instruction Hours / Week : 5

Credits: 4

Common to all branches and with effect from 2016-17

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#### Course Objectives:

1. To develop skills to design and analyze linear and nonlinear data structures.
2. Develop algorithms for manipulating linked lists, stacks, queues, trees and graphs.
3. Develop recursive algorithms as they apply to trees and graphs.
4. To get acquaintance with frequently used data structures in Software Engineering and Programming practices.
5. To Strengthen the ability to identify and apply the suitable data structure for the given real world problem
6. To develop a base for advanced computer science study.

#### Syllabus

##### UNIT I

Definitions of Data structures, Storage Structures and File Structures. Primitive and Non-primitive Data Structures, Linear and Nonlinear Data Structures.

Performance Analysis, Asymptotic Notation and Performance Measurement.

Linear Lists - ADT, Array Representation, Linked Representation and applications.

##### UNIT II

Stacks: Definition, The Abstract Data Type, Array Representation, Linked Representation.

Queues: Definition, The Abstract Data Type, Array Representation, Linked Representation,

Circular Queues, Applications. Linked Lists: Single Linked Lists – Insertion and Deletion,

Double Linked Lists – Insertion and Deletion.

**Skip List and Hashing:** Dictionaries, the ADT of Skip List, Linear List Representation, Hash Table Representation.

##### UNIT III

Binary Trees - Definition and Properties, ADT, Array Representation, Linked Representation, and Applications. Heap- Definition and Applications.

Binary Search Trees - Definition, ADT, Implementation and Applications.

Introduction to Balanced Search Trees - AVL Trees, Red-Black Trees, and Splay Trees.

## UNIT IV

Graphs - Definition and Properties, Modeling Problems as Graphs, ADT, Representations, Breadth First Search and Depth First Search. Priority Queues: Definition and Applications, Single and Double Ended Priority Queues, Linear Lists, Heaps, Leftist Trees, Binomial Heaps, Fibonacci Heaps, Pairing Heaps  
Introduction to Algorithms for Solving Problems: Minimum Spanning Tree, Single Source Shortest Paths, All-Pairs Shortest Paths, and Maximum Flow.

## UNIT V

Efficient Binary Search Trees: Optimal Binary Search Trees, AVL Trees, Red – Black Trees, Splay Trees. Multiway Search Trees: m – way Search Trees, B – Trees, B+ - Trees  
External Searching - Concepts of Simple Indexing, Multilevel Indexing, B- Trees, B+ Trees, Static Hashing, Collision Resolution Techniques, Packing Density, Bucket Size and Extendible Hashing.

### Text Books:

1. Sahni S, Data Structures, Algorithms and Applications in C++, 2nd Edition, Universities Press, 2005.
2. Malik D S, Data Structures using C++, Cengage Learning, 2003.
3. Fundamentals of Data Structures in C++ by Ellis Horowitz, Sartaj Sahni, Dinesh Mehta, Universities Press, Second Edition.

### REFERENCES:

1. Data Structures and Algorithms Using C++ by Ananda Rao Akepogu and Radhika Raju Palagiri
2. Classic Data Structure by D. Samanta, Eastern Economy Edition.
3. Data Structures and Algorithms Made Easy by Narasimha Karumanchi, Second Edition, Written in C/C++, CareerMonk Publications, Hyderabad
4. ADTs, Data Structures and Problem Solving with C++, Larry Nyhoff, Pearson
5. Data Structures using C++, D.S.Malik, 2nd Edition, Cengage Learning
6. Data Structures through C++, Yashavant P.Kanetkar, BPB Publication
7. Data Structures using C and C++, Yedidyah Langsam.Moshe J.Augenstein Aaron M.Tenenbaum, 2nd Edition,PHI
8. Data Structures using C & C++, Rajesh K.Shukla, Wiley-India
9. Tremblay J P and Sorenson P G, Introduction to Data Structures with Applications, 2nd Edition, McGraw-Hill, 1984.
10. Cormen T H, Leiserson C E, Stein C, and Rivest R L, Introduction to Algorithms, 2nd Edition, Prentice Hall of India, 2007.
11. Folk M J, Riccardi G, and Zoellick B, File Structures-An Object-Oriented Approach with C++, Pearson
12. T.H.Cormen, C.E.Leiserson, R.L.Rivest, C. Stein, Introduction to Algorithms, 2nd edition, Prentice-Hall India, 2001
13. J. Kleinberg and E. Tardos, Algorithm Design, Pearson International Edition, 2005.
14. Data Structures Using C and C++ Yddish Langsam, Moshe J. Augenstein and Aaron M. Tanenbaum, Prentice Hall Of India (2nd Edition) (Chapters 1 to 8)



## **Course Outcomes:**

### **After completion of the course the student will have:**

1. A knowledge of various Methods and Notations for comparing the performance of various Data Structures.
2. A knowledge of development of linear data structures like stacks, Queues and their operations, Implementation using Arrays and Linked Lists.
3. A knowledge of properties of Binary Search Trees and balanced binary search trees.
4. A knowledge of properties of Splay Trees, Red Black Trees, AVL Trees and their implementation

A knowledge of efficient external searching techniques using Indexing, Hashing.



S.V. UNIVERSITY COLLEGE OF ENGINEERING : TIRUPATI – 517502

## 4-Year B.Tech Degree Programme

### PHT01 Engineering Physics

Instruction Hours / Week : 3

Credits: 3

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Common to all branches and with effect from 2016-17

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#### Course Objectives:

1. To make students aware of basic crystallographic geometry, defect studies and estimation of crystal structure by diffraction techniques.
2. To provide students with sound knowledge of basic principles of quantum Mechanics and its applications in problem solving.
3. To understand the concept of electrical conductivity by classical and quantum free electron theories and distinguishing materials based on band theory of solids.
4. Basic principles of laser optics and applications and ultrasonics.
5. Quantum confinement and size dependent properties of nanomaterials, their synthesis and applications.

#### Syllabus

##### UNIT-I

**Crystallography** : Unit Cell – Bravais Lattice – Crystal systems – Crystal packing – Close Packed Structures – NaCl, ZnS and Diamond – Miller Indices – Bragg's Law – Bragg's Spectrometer and Crystal Structure determination – Defects in crystal Structure – Point Defects and Line Defects .

##### UNIT – II

**Quantum Mechanics** : Wave – Particle duality – de Broglie Concept of Matter Waves – Properties of Matter Waves – Davison and Germer Experiment – G.P.Thomson Experiment – Heisenberg's Uncertainty Principle – Schrödinger's Time Independent and Time Dependent Wave equation – Significance of Wave Function – Electron in an Infinite Square Potential Well – Probability Densities and Energy Levels.

##### UNIT – III

**Band Theory of Solids** : Classical Free Electron Theory of Metals – Success and Failures – Quantum Free Electron Theory – Fermi Factor – Electron in Periodic Potential – Bloch Theorem – Kronig – Penney Model – Distinction between Metals , Insulators and Semiconductors – Intrinsic and Extrinsic Semiconductors – Hall Effect.

## UNIT – IV

**Lasers** : Introduction – Spontaneous and Stimulated emissions – Population Inversion – Types of Lasers – Ruby Laser – He-Ne Laser – Semiconductor Laser – Applications of Lasers.

**Ultrasonics** : Introduction – Production of Ultrasonic Waves by Magnetostriction and Piezoelectric methods – Detection and Applications of Ultrasonic Waves.

## UNIT – V

**NanoPhysics and Nanotechnology** : Introduction to Nanomaterials –Properties: Optical Properties – Quantum Confinement – Electrical properties. Synthesis of Nanomaterials: Ball milling, Arc deposition method – Chemical Vapour Deposition-Pulsed laser deposition. Characteristics of C<sup>60</sup> (Zero dimensional), Carbon Nanotubes (One Dimensional) and Graphene (Two Dimensional). Applications of Nanomaterials.

### Text Books:

1. R.K.Gaur and S.L.Gupta ``Engineering Physics’’ Sultan and Chand Pub., New Delhi
2. S.P.Basava Raju `` A Detailed Text Book of Engineering Physics’’ Sole Distributers, Subhash Stores Book Corner, Bangalore
3. Hitendra K.Malik and A.K.Singh ``Engineering Physics’’ Tata MCGraw Hill Education Pvt.Ltd., New Delhi
4. G.Senthil Kumar, `` Engineering Physics’’ VRH Publishers Pvt. Ltd, Hyderabad
5. M.S.Ramachandra Rao and Shubra Singh, ``Nanoscience and Nanotechnology’’ Wiley India Pvt.Ltd, New Delhi

### Reference Books

6. John Allison, ``Electronic Engineering Materials and Devices’’ Tata Mc Graw Hill Publications.
7. B.L Theraja, “Modern physics”, S.Chand & Company.
8. V. Raghavan “Material Science”, Tata Mc Graw Hill Publications.

### Course Outcomes:

1. Students demonstrate appropriate competence and working knowledge of laws of modern physics in understanding advanced technical engineering courses.
2. Ability to understand the crystal geometries and estimation of crystal structure by X-ray diffraction techniques.
3. Students demonstrate the ability to identify and apply appropriate analytical and mathematical tools of physics in solving engineering problems.
4. Students demonstrate the ability to apply knowledge of band theory in the area of electronics and understanding the basic electron transportation phenomenon in micro devices.
5. Student’s ability to understand the principles in the production and applications of lasers and their effective utilization in optical communication and detection.
6. Students demonstrate the ability to understand size depended properties of nano dimensional materials and their effective utilization in making nano and micro devices for further microminiaturization of electronic devices.



**S.V. UNIVERSITY COLLEGE OF ENGINEERING : TIRUPATI – 517502**

**4-Year B.Tech Degree Programme**

**CYT01 Engineering Chemistry**

**Instruction Hours / Week : 3**

**Credits: 3**

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**Common to all branches and with effect from 2016-17**

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**Course Objectives:**

1. To provide the information regarding hardness of water, effects of hard water in boilers and treatment methods to avoid bad effect on human health. And also to check the parameters of various water samples by experimental techniques.
2. To make students familiar with importance of electrochemical processes in nature and industry, like the coating of objects with metals or metal oxides through electro deposition, also to provide the information about new technological solar batteries.
3. To provide knowledge on the fuel properties to help in selecting good fuel for reducing the pollution based on its efficiency without much smoke and also to make aware of synthetic fuels.
4. To make aware of the design synthesis and analysis of polymers and their multi-faceted applications in Engineering, Airplane engineering and bio-medical engineering.
5. To make aware of compounding and processing of polymers and description of major polymers, structure property relations and application and to provide their relevance in the electric and electronic fields.
6. To provide the knowledge of manufacturing of cement and analysis of cement and also the classification and properties of refractories and ceramics.

**Syllabus**

**UNIT-I:**

**WATER TREATMENT:** Introduction – Effect of water on rocks and minerals – hardness of water – disadvantages of hard water – boiler feed water – scale and sludge formation in boilers – caustic embrittlement – boiler corrosion – priming and foaming – softening methods-lime soda, zeolite and ion exchange process-Specification of potable water and purification of Drinking water – chemical analysis of water-Hardness, acidity, alkalinity, chloride and dissolved oxygen.

## **UNIT –II:**

**ELECTRO CHEMISTRY AND CORROSION:** Electrode potential – reference electrodes – hydrogen, calomel and glass electrode – PH and its determination –batteries – fuel cells – aluminum air battery – solar battery – lead acid storage cell.-Corrosion: Types of corrosion – factors influencing corrosion – theories of corrosion – prevention of corrosion – cathodic protection – metallic coatings – hot dipping, spraying, cementation, cladding and electro plating.

## **UNIT –III:**

**FUELS AND COMBUSTION:** Introduction – classification of fuels – calorific value and its determination – bomb calorimeter – Boy’s gas calorimeter – theoretical calculation of calorific value of fuel – coal – analysis of coal – metallurgical coke – petroleum –refining of petroleum-synthetic petrol – octane and cetane number– combustion – mass analysis from volume analysis and vice versa – analysis of flue gas by Orsat’s apparatus.

## **UNIT –IV:**

**HIGH POLYMERS:** Nomenclature of polymers – types of polymerization-Plastics – classification of plastics – moulding constituents of plastics– preparation, properties and applications of polythene, nylon, Teflon, and bakelite – Rubbers – vulcanization of rubber – compounding of rubber- synthetic rubbers-buna-N, thiocol and silicon rubbers- Lubricants-classification-mechanism-properties of lubricating oils-selection of lubricants for engineering applications.

## **UNIT–V:**

**BUILDING MATERIALS:** Manufacture-dry and wet processes-setting and hardening of cement-analysis of cement. Refractories-classification-properties and engineering applications. Ceramics-classification-properties and engineering applications

### **Books Recommended:**

1. Engineering Chemistry : PC Jain & M Jain-Dhanpat rai publishing company, New Delhi
2. Engineering Chemistry : BK Sharma
3. Engineering Chemistry : SS Dhara
4. Physical Chemistry : Puri & Sharma-Vishal Pulishing Company(VPC), Jalandhar
5. Physical Chemistry : Bahl & Tuli-
- 6 Polymer Science- :Gowarikar-
- 7 Physical Chemistry by : Glasstone-

### **Course Outcomes:**

1. To understand the importance of the water and its quality
2. To identify uses of electrochemical processes in nature and industry
3. To understand properties of good fuel for reducing auto exhaust gases to the environment
4. To understand synthesis, properties and engineering applications of polymers
5. To know the procedure and analysis of cementing materials



**S.V. UNIVERSITY COLLEGE OF ENGINEERING : TIRUPATI – 517502**

**4-Year B.Tech Degree Programme**

**MET01 Engineering Graphics**

**Instruction Hours / Week : 5**

**Credits: 4**

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**Common to all branches and with effect from 2016-17**

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**Course Objectives:**

1. Students are to learn fundamentals of engineering graphics as it applied to basic engineering core course.
2. To provide the knowledge of construction of basic scales, conics, ellipse, parabola and hyperbola.
3. To impart knowledge about the construction of Cycloidal curves.
4. To understand the concepts of first angle and third angle projections of drawing.
5. To understand the concepts of projections of plane surfaces, solids, cylinders and cones.
6. To have thorough understanding of sections of solids and orthographic projections.

**Syllabus**

**UNIT-I**

Scales, plane scale, diagonal scale Practices

Conics- construction of Ellipse, parabola and Hyperbola by eccentricity method

Ellipse- Concentric circles and Oblong methods, Rectangular hyperbola

**UNIT-II**

Construction of cycloidal curves- epi cycloid and hypocycloid, Involute- Circle, Polygon

**UNIT-III**

Projection of points-Principles of Projections, First and Third angle projections, projections of points

Projection of Lines- Projection of straight Lines, lines inclined to one plane and parallel to the other, Lines inclined to both planes, True length and true inclinations, Location of traces

**UNIT-IV**

Projection of Plane surfaces and solids-Projection of Polygonal surfaces and circular lamina inclined to both planes. Projection of right regular solids- Projection of simple solids such as Prisms, Pyramids, Cylinders and Cones with their axes perpendicular to anyone of the Principal planes and inclined to the other.

## UNIT-V

Section of Solids- Sections of above solids in simple vertical position resting on their base, by cutting planes inclined to one reference plane and perpendicular to the other-True shape of the sections.

Orthographic Projections- Conversion of Pictorial views into orthographic views of simple objects.

### Text Books:

1. **Bhatt N.D. and V.M. Panchal**, Engineering Drawing Revised Edition, Charotar Publications, 2001.
2. **Dhananjaya A Jolhe**, Engineering Drawing with an introduction to Auto CAD, Tata McGrawhill - 2009
3. **K.L.Narayana and P. Kannaih**, A text Book of Engineering Drawing, Scitech Publications – 1999.
4. **Venugopal,K.**, Engineering Drawing and Graphics, New Age International Publishers

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

1. Make a distinction between first angle projection and third angle projection of drawing.
2. Draw hyperbola, parabola, Involutives and Cycloidal curves.
3. Draw sections of solids including cylinders, cones, prisms and pyramids.
4. Draw projections of lines, planes, solids and sections of solids.
5. Draw orthographic projections of lines, planes, and solids.



4-Year B.Tech Degree Programme

CSP02 Data Structures Lab

Instruction Hours / Week : 3

Credits: 2

Common to all branches and with effect from 2016-17

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Course Objectives:

1. Arm the students with the basic programming concepts.
2. Arm the students with the necessary constructs of C++ programming.
3. Choose the appropriate data structure and algorithm design method for a specified application.
4. To Gain knowledge in practical applications of data structures.

Syllabus

1. Write a C++ Program to create a sequential file with at least 5 records, each record having the structure shown below:

USN	Name	Marks1	Marks2	Marks3
Non-zero positive integer	25 Characters	Positive Integer	Positive Integer	Positive Integer

Write necessary functions

- a. To display all the records in the file.
  - b. To search for a specific record based on the USN. In case the record is not found, suitable message should be displayed. Both the options in this case must be demonstrated.
2. Write and demonstrate the following C++ functions:
    - a. **newStrCpy** that does the same job as **strcpy**
    - b. **newStrCat** that does the same job as **strcat** without using any library functions.
  3. Write a C++ Program, which accepts the Internet Protocol (IP) address in decimal dot format(ex. 153.18.8.105) and converts it into 32-bit long integer (ex. 2568095849) using **strtok** library function and unions.
  4. Write a C++ Program to construct a **stack of integers** and to perform the following operations on it:
    - a. Push
    - b. Pop
    - c. Display



The program should print appropriate messages for stack overflow, stack underflow, and stack empty.

5. Write a C++ Program to convert and print a given valid parenthesized **infix** arithmetic expression to **postfix** expression. The expression consists of single character operands and the binary operators + (plus), - (minus), \* (multiply) and / (divide).
6. Write a C++ Program to evaluate a valid **suffix/postfix** expression using stack. Assume that the suffix/postfix expression is read as a single line consisting of non-negative single digit operands and binary arithmetic operators. The arithmetic operators are + (add), - (subtract), \* (multiply) and / (divide).
7. Write a C++ Program to simulate the working of a **queue of integers** using an array. Provide the following operations:
  - a. Insert
  - b. Delete
  - c. Display
8. Write a C++ Program to simulate the working of a **circular queue of integers** using an array. Provide the following operations:
  - a. Insert
  - b. Delete
  - c. Display
9. Write a C++ Program using dynamic variables and pointers, to construct a **singly linked list** consisting of the following information in each node: student id (integer), student name (character string) and semester (integer). The operations to be supported are:
  - a. The insertion operation
    - i. At the front of a list
    - ii. At the back of the list
    - iii. At any position in the list
  - b. Deleting a node based on student id. If the specified node is not present in the list an error Message should be displayed. Both the options should be demonstrated.
  - c. Searching a node based on student id and updates the information content. If the specified Node is not present in the list an error message should be displayed. Both situations should be displayed.
  - d. Displaying all the nodes in the list.  
(Note: Only one set of operations among a, b and c with d may be asked in the examination)
10. Write a C++ Program using dynamic variables and pointers to construct a **stack of integers** using **singly linked list** and to perform the following operations:
  - a. Push
  - b. Pop
  - c. DisplayThe program should print appropriate messages for stack overflow and stack empty.
11. Write a C++ Program using dynamic variables and pointers to construct a **queue of integers** using **singly linked list** and to perform the following operations:
  - a. Insert
  - b. Delete

c. Display

The program should print appropriate messages for queue full and queue empty.

12. Write a C++ Program to support the following operations on a **doubly linked list** where each node consists of integers:
  - a. Create a doubly linked list by adding each node at the front.
  - b. Insert a new node to the left of the node whose key value is read as an input
  - c. Delete the node of a given data, if it is found, otherwise display appropriate message.
  - d. Display the contents of the list.  
(Note: Only either (a, b and d) or (a, c and d) may be asked in the examination)
13. Write a C++ Program
  - a. To construct a **binary search tree** of integers.
  - b. To traverse the tree using all the methods i.e., **inorder, preorder and postorder**.
  - c. To display the elements in the tree.
14. Write recursive C++ Programs for
  - a. Searching an element on a given list of integers using the **Binary Search method**.
  - b. Solving the **Towers of Hanoi problem**.

**Text Books:**

1. Data structures and Algorithms using C++, AnandaRaoAkepogu and RadhikaRajuPalagiri, Pearson Education.
2. C++ Solutions for Mathematical Problems, Ghosh, Arun, New Age International Publishers.
3. Data Structures A Pseudocode Approach with C++, IndiaEdition, R.F.Gilberg and B.A.Forouzan, Cengage Learning.
4. Programming Principles and Practice using C++, B.Stroustrup, Addison-Wesley (Pearson education).
5. Data Structures and STL, W.J.Collins, McGrawHill, International edition.
6. Data structures and Algorithms with OODesign patterns in C++, B.R.Priess, John Wiley & sons.
7. The Art, Philosophy, and Science of OOP with C++, Rick Miller, SPD.
8. C++ for Programmers, P.J.Deitel and H.M.Deitel, PHI/Pearson

**Course Outcomes:**

1. Understand algorithmic thinking and apply it to programming.
2. Be able to design and analyze the time and space efficiency of the data structure.
3. Be capable to identify the appropriate data structure for given problem.
4. Have practical knowledge on the application of data structures.



4-Year B.Tech Degree Programme

MEP01 Workshop Practice

Instruction Hours / Week : 3

Credits: 2

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Common to all branches and with effect from 2016-17

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**Course Objectives:**

1. To impart training to the students in different crafts of workshop.
2. To make known about the importance of Carpentry, Welding in our daily life.
3. To identify what are runners, risers in a foundry shop, and welding equipment used in Gas welding and Arc welding.
4. To identify different smithy tools used in tin smithy.

**Syllabus**

**Carpentry**

Wood sizing exercise in planning, marking, sawing, chiseling and grooving to prepare

1. Half – lap joint
2. Dove – tail joint
3. Tenon joint

**Fitting**

Markings, cutting and filing to prepare

1. Straight fitting
2. V – fitting
3. Square fitting

**Tin smithy**

Markings, bending and cutting to prepare

1. Round tin
2. Square tin

**Foundry**

Ramming and placing of riser and runner to prepare the moulds for the following

1. Two – stepped pulley
2. Three – stepped pulley
3. Dumbell

## **Welding**

### Preparation of

1. Lap joint
2. Butt joint
3. T – joint

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

1. Prepare different types of joints by means of wood, i.e., wood working.
2. Prepare sand moulds by means of wooden patterns.
3. Identify different and prominent tools used in various sections of workshop.
4. Make a distinction between Lap, Butt and T – joints in welding processes.
5. Perform markings, cutting, and filing on steel specimens by fitting tools.



**S.V. UNIVERSITY COLLEGE OF ENGINEERING : TIRUPATI – 517502**

**4-Year B.Tech Degree Programme**

**EET01 Basic Electrical Engineering**

**Instruction Hours / Week : 3**

**Credits: 3**

**Common to Civil, Mechanical, Chemical branches and with effect from 2016-17**

**Course Objectives:**

This course is design to

1. Apprise student about fundamentals of Electrical Circuits and Machines
2. Make the student learn operation of electrical machines and computation of performance

**Syllabus**

**UNIT-I**

**Basic Circuit Concepts:** Basic circuit elements R, L and C—Classification of circuit elements, voltage and current sources—Kirchoff's laws—Star-delta and Delta to Star transformations, Network reduction techniques, Simple problems

**UNIT-II**

**DC Circuits:** DC Circuit analysis by mesh current method and Nodal voltage method, Superposition theorem, Thevenin's theorem and maximum power transfer theorem –Application to simple DC circuits

**UNIT-III**

**AC Circuits:** Average value—RMS value—form factor, crest factor---j-notation, Phasor diagrams, reactance, impedance and admittance, active power, reactive power, apparent power , power triangle.—Expression for real power in ac circuit—Analysis of simple---series and parallel circuits

**UNIT-IV**

**DC Machines:** Principle of operation of dc generator, emf equation, types of generators, principle of operation of dc motor, Back EMF, torque equation of dc motor, Illustrative examples, applications dc motors

## UNIT-V

**Transformers:** Single phase transformer –principle of operation—types of transformers—emf equation, transformer on load

**Induction Motors:** principle of operation of 3-phase induction motor, types of 3-phase induction motors Principle of single phase induction motor, types , applications of 3-phase and single phase induction motors

**Illuminations:** Introduction, Laws of Illumination, Lighting calculations, Design of lighting schemes

### Text Books:

1. Network analysis by A Sudhakar, ShyamMohan ( Tata McGrawHill)
2. Basic Electrical Engineering by DP Kothari, IH Nagrath (Tata McGrawHill)

### References:

1. Electrical Technology – E. Hughes (University Press)
2. Electrical Circuits – Joseph Edminister (TMH Series)

**Course Outcomes:** Student will be able to

- a. Understand and apply principles of basic electrical circuits
- b. Analyse and apply theorems for different types of networks
- c. Understand the principle of operation of DC machines, Transformers and Induction motors
- d. Compute the performance of DC motor, Single phase Transformer
- e. Carryout calculations related to design of illumination schemes



**S.V. UNIVERSITY COLLEGE OF ENGINEERING : TIRUPATI – 517502**

**4-Year B.Tech Degree Programme**

**ECT01 Basic Electronics Engineering**

**Instruction Hours / Week : 3**

**Credits: 3**

**Common to Civil, Mechanical, Chemical branches and with effect from 2016-17**

**Course Objectives:**

1. This course is to focus on the basics of Electronics and Communication to other non-circuit branch students.
2. To understand Electronic devices used in day-to-day instrument.
3. To have knowledge of amplifier working principles.
4. To understand the digital circuits principles.
5. To have knowledge of instruments in measurements.
6. To gain knowledge of communication principles.

**Syllabus**

**UNIT-I**

**Electronics Devices:** Introduction to electronics, review of p-n junction operation, diode applications, Zener diode as regulator, Transistor – Biasing, characteristics, FET-Operation, Types of FETs, Photo Electronic Devices.

**UNIT-II**

**Amplifiers and applications:** Transistor Amplifier, Amplifier characteristics, Simple RC coupled amplifier and frequency response. Cascaded amplifiers, FET Amplifier, Oscillator principle, LC and RC oscillators.

**UNIT-III**

**Digital Circuits:** Number systems, Conversion of number systems, Logic gates, Boolean theorems, Demorgan theorems, combination logic circuits, Flip-Flops, Counters and Shift Registers, Data converters, ADC and DAC convertors

**UNIT-IV**

**Instrumentation:** Measurements, Errors in measurements, Cathode Ray oscilloscope, Measurements using CRO – Voltage, Current, Frequency, Time and Phase angle, Transducers, Strain gauges, LVDT, Temperature measurements.

## **UNIT-V**

**Principles of Communication:** Basic Communication system, Need for Modulation, Types of Modulation, AM Modulation and Demodulation, FM Modulation and Demodulation, Sampling Theorem, Pulse Modulation, Digital Modulation Techniques.

### **Text Books:**

1. Salivahanan, N Suresh Kumar Electronic Devices and circuits, 3 rd Edition, McGraw Hill publications.
2. A. Ananda Kumar, Switching theory and logic design, Prentice Hall of India Ltd.
3. Helfrick and cooper, Modern Electronic Instrumentation and Measurement techniques, Pearson Education.
4. Anokh Singh, Principles of Communication Engineering, S.Chand & Co. New Delhi
5. P. Ramakrishna, Analog Communication, Mcgraw Hill Co.

### **Course Outcomes:**

1. Understands different types of Electronic Devices and working mechanism.
2. Have knowledge of amplifiers and oscillators used in day-to-day life.
3. Understands digital circuits used in computer systems and other systems.
4. Will have knowledge of measurements and measuring instruments.
5. Understands the principles of communication systems used in day-to-day life.