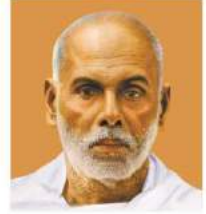
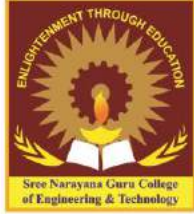


# **Sree Narayana Guru College of Engineering & Technology**

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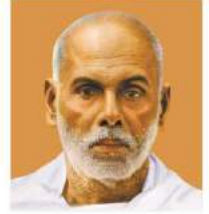


## **SYLLABUS OF COURSES RELEVANT TO PROFESSIONAL ETHICS**



# **Sree Narayana Guru College of Engineering & Technology**

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## **2015 SCHEME**

Course code	Course Name	L-T-P-Credits	Year of Introduction
HS210	LIFE SKILLS	2-0-2	2016

**Prerequisite : Nil**

**Course Objectives**

- To develop communication competence in prospective engineers.
- To enable them to convey thoughts and ideas with clarity and focus.
- To develop report writing skills.
- To equip them to face interview & Group Discussion.
- To inculcate critical thinking process.
- To prepare them on problem solving skills.
- To provide symbolic, verbal, and graphical interpretations of statements in a problem description.
- To understand team dynamics & effectiveness.
- To create an awareness on Engineering Ethics and Human Values.
- To instill Moral and Social Values, Loyalty and also to learn to appreciate the rights of others.
- To learn leadership qualities and practice them.

**Syllabus**

**Communication Skill:** Introduction to Communication, The Process of Communication, Barriers to Communication, Listening Skills, Writing Skills, Technical Writing, Letter Writing, Job Application, Report Writing, Non-verbal Communication and Body Language, Interview Skills, Group Discussion, Presentation Skills, Technology-based Communication.

**Critical Thinking & Problem Solving:** Creativity, Lateral thinking, Critical thinking, Multiple Intelligence, Problem Solving, Six thinking hats, Mind Mapping & Analytical Thinking.

**Teamwork:** Groups, Teams, Group Vs Teams, Team formation process, Stages of Group, Group Dynamics, Managing Team Performance & Team Conflicts.

**Ethics, Moral & Professional Values:** Human Values, Civic Rights, Engineering Ethics, Engineering as Social Experimentation, Environmental Ethics, Global Issues, Code of Ethics like ASME, ASCE, IEEE.

**Leadership Skills:** Leadership, Levels of Leadership, Making of a leader, Types of leadership, Transactions Vs Transformational Leadership, VUCA Leaders, DART Leadership, Leadership Grid & leadership Formulation.

**Expected outcome**

The students will be able to

- Communicate effectively.
- Make effective presentations.
- Write different types of reports.
- Face interview & group discussion.
- Critically think on a particular problem.
- Solve problems.
- Work in Group & Teams
- Handle Engineering Ethics and Human Values.
- Become an effective leader.



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**Resource Book:**

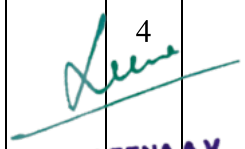
*Life Skills for Engineers*, Compiled by ICT Academy of Kerala, McGraw Hill Education (India) Private Ltd., 2016


**References:**

- Barun K. Mitra; (2011), “*Personality Development & Soft Skills*”, First Edition; Oxford Publishers.
- Kalyana; (2015) “*Soft Skill for Managers*”; First Edition; Wiley Publishing Ltd.
- Larry James (2016); “*The First Book of Life Skills*”; First Edition; Embassy Books.
- Shalini Verma (2014); “*Development of Life Skills and Professional Practice*”; First Edition; Sultan Chand (G/L) & Company
- John C. Maxwell (2014); “*The 5 Levels of Leadership*”, Centre Street, A division of Hachette Book Group Inc.

**Course Plan**

Module	Contents	Hours L-T-P		Sem. Exam Marks
		L	P	
I	Need for Effective Communication, Levels of communication; Flow of communication; Use of language in communication; Communication networks; Significance of technical communication, Types of barriers; Miscommunication; Noise; Overcoming measures,	2		See evaluation scheme
	Listening as an active skill; Types of Listeners; Listening for general content; Listening to fill up information; Intensive Listening; Listening for specific information; Developing effective listening skills; Barriers to effective listening skills.		2	
	<b>Technical Writing:</b> Differences between technical and literary style, Elements of style; Common Errors, <b>Letter Writing:</b> Formal, informal and demi-official letters; business letters, <b>Job Application:</b> Cover letter, Differences between bio-data, CV and Resume, <b>Report Writing:</b> Basics of Report Writing; Structure of a report; Types of reports.		4	
	<b>Non-verbal Communication and Body Language:</b> Forms of non-verbal communication; Interpreting body-language cues; Kinesics; Proxemics; Chronemics; Effective use of body language	3		
	<b>Interview Skills:</b> Types of Interviews; Ensuring success in job interviews; Appropriate use of non-verbal communication, <b>Group Discussion:</b> Differences between group discussion and debate; Ensuring success in group discussions, <b>Presentation Skills:</b> Oral presentation and public speaking skills; business presentations, <b>Technology-based Communication:</b> Netiquettes: effective e-mail messages; power-point presentation; enhancing editing skills using computer software.		4	

  
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<p><b>II</b></p>	<p>Need for Creativity in the 21<sup>st</sup> century, Imagination, Intuition, Experience, Sources of Creativity, Lateral Thinking, Myths of creativity</p> <p>Critical thinking Vs Creative thinking, Functions of Left Brain &amp; Right brain, Convergent &amp; Divergent Thinking, Critical reading &amp; Multiple Intelligence.</p> <p>Steps in problem solving, Problem Solving Techniques, Problem Solving through Six Thinking Hats, Mind Mapping, Forced Connections.</p> <p>Problem Solving strategies, Analytical Thinking and quantitative reasoning expressed in written form, Numeric, symbolic, and graphic reasoning, Solving application problems.</p>	<p>2</p> <p>2</p> <p>2</p>	<p>2</p> <p>2</p>	
<p><b>III</b></p>	<p>Introduction to Groups and Teams, Team Composition, Managing Team Performance, Importance of Group, Stages of Group, Group Cycle, Group thinking, getting acquainted, Clarifying expectations.</p> <p>Group Problem Solving, Achieving Group Consensus.</p> <p>Group Dynamics techniques, Group vs Team, Team Dynamics, Teams for enhancing productivity, Building &amp; Managing Successful Virtual Teams. Managing Team Performance &amp; Managing Conflict in Teams.</p> <p>Working Together in Teams, Team Decision-Making, Team Culture &amp; Power, Team Leader Development.</p>	<p>3</p> <p>3</p> <p>3</p>	<p>2</p> <p>2</p>	
<p><b>IV</b></p>	<p>Morals, Values and Ethics, Integrity, Work Ethic, Service Learning, Civic Virtue, Respect for Others, Living Peacefully.</p> <p>Caring, Sharing, Honesty, Courage, Valuing Time, Cooperation, Commitment, Empathy, Self-Confidence, Character</p> <p>Spirituality, Senses of 'Engineering Ethics', variety of moral issued, Types of inquiry, moral dilemmas, moral autonomy, Kohlberg's theory, Gilligan's theory, Consensus and controversy, Models of Professional Roles, Theories about right action, Self-interest, customs and religion, application of ethical theories.</p> <p>Engineering as experimentation, engineers as responsible experimenters, Codes of ethics, Balanced outlook on.</p> <p>The challenger case study, Multinational corporations, Environmental ethics, computer ethics,</p>	<p>3</p> <p>3</p> <p>3</p>	<p>2</p>	 <b>Dr. LEENA A V</b> <b>PRINCIPAL</b> <b>SREE NARAYANA GURU COLLEGE OF</b> <b>ENGINEERING &amp; TECHNOLOGY</b> <b>PAYYANUR, KANNUR</b>

	Weapons development, engineers as managers, consulting engineers, engineers as expert witnesses and advisors, moral leadership, sample code of Ethics like ASME, ASCE, IEEE, Institution of Engineers(India), Indian Institute of Materials Management, Institution of electronics and telecommunication engineers(IETE), India, etc.	3	
V	Introduction, a framework for considering leadership, entrepreneurial and moral leadership, vision, people selection and development, cultural dimensions of leadership, style, followers, crises.	4	2
	Growing as a leader, turnaround leadership, gaining control, trust, managing diverse stakeholders, crisis management		
	Implications of national culture and multicultural leadership Types of Leadership, Leadership Traits.	2	
	Leadership Styles, VUCA Leadership, DART Leadership, Transactional vs Transformational Leaders, Leadership Grid, Effective Leaders, making of a Leader, Formulate Leadership		2
<b>END SEMESTER EXAM</b>			

### EVALUATION SCHEME

#### Internal Evaluation

*(Conducted by the College)*

**Total Marks: 100**

#### Part – A

*(To be started after completion of Module 1 and to be completed by 30<sup>th</sup> working day of the semester)*

1. Group Discussion – Create groups of about 10 students each and engage them on a GD on a suitable topic for about 20 minutes. Parameters to be used for evaluation is as follows;

- |       |                        |   |          |
|-------|------------------------|---|----------|
| (i)   | Communication Skills   | – | 10 marks |
| (ii)  | Subject Clarity        | – | 10 marks |
| (iii) | Group Dynamics         | - | 10 marks |
| (iv)  | Behaviors & Mannerisms | - | 10 marks |

*(Marks: 40)*



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## Part – B

*(To be started from 31<sup>st</sup> working day and to be completed before 60<sup>th</sup> working day of the semester)*

2. Presentation Skills – Identify a suitable topic and ask the students to prepare a presentation (preferably a power point presentation) for about 10 minutes. Parameters to be used for evaluation is as follows;

- |       |                           |   |          |
|-------|---------------------------|---|----------|
| (i)   | Communication Skills*     | - | 10 marks |
| (ii)  | Platform Skills**         | - | 10 marks |
| (iii) | Subject Clarity/Knowledge | - | 10 marks |

*(Marks: 30)*

\* Language fluency, audibility, voice modulation, rate of speech, listening, summarizes key learnings etc.

\*\* Postures/Gestures, Smiles/Expressions, Movements, usage of floor area etc.

## Part – C

*(To be conducted before the termination of semester)*

3. Sample Letter writing or report writing following the guidelines and procedures. Parameters to be used for evaluation is as follows;

- |       |                            |   |          |
|-------|----------------------------|---|----------|
| (i)   | Usage of English & Grammar | - | 10 marks |
| (ii)  | Following the format       | - | 10 marks |
| (iii) | Content clarity            | - | 10 marks |

*(Marks: 30)*

**External Evaluation**  
*(Conducted by the University)*

Total Marks: 50

Time: 2 hrs.

## Part – A

### Short Answer questions

There will be one question from each area (five questions in total). Each question should be written in about maximum of 400 words. Parameters to be used for evaluation are as follows;

- |       |                                   |
|-------|-----------------------------------|
| (i)   | Content Clarity/Subject Knowledge |
| (ii)  | Presentation style                |
| (iii) | Organization of content           |

  
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(Marks: 5 x 6 = 30)

## Part – B

### Case Study

The students will be given a case study with questions at the end the students have to analyze the case and answer the question at the end. Parameters to be used for evaluation are as follows;

- (i) Analyze the case situation
- (ii) Key players/characters of the case
- (iii) Identification of the problem (both major & minor if exists)
- (iv) Bring out alternatives
- (v) Analyze each alternative against the problem
- (vi) Choose the best alternative
- (vii) Implement as solution
- (viii) Conclusion
- (ix) Answer the question at the end of the case

(Marks: 1 x 20 = 20)



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Course code	Course Name	L-T-P - Credits	Year of Introduction
HS200	Business Economics	3-0-0-3	2016

**Prerequisite:** Nil

**Course Objectives**

- To familiarize the prospective engineers with elementary Principles of Economics and Business Economics.
- To acquaint the students with tools and techniques that are useful in their profession in Business Decision Making which will enhance their employability;
- To apply business analysis to the “firm” under different market conditions;
- To apply economic models to examine current economic scenario and evaluate policy options for addressing economic issues
- To gain understanding of some Macroeconomic concepts to improve their ability to understand the business climate;
- To prepare and analyse various business tools like balance sheet, cost benefit analysis and rate of returns at an elementary level

**Syllabus**

Business Economics - basic concepts, tools and analysis, scarcity and choices , resource allocation, marginal analysis, opportunity costs and production possibility curve. Fundamentals of microeconomics - Demand and Supply Analysis, equilibrium, elasticity, production and production function, cost analysis, break-even analysis and markets. Basics of macroeconomics - the circular flow models, national income analysis, inflation, trade cycles, money and credit, and monetary policy. Business decisions - investment analysis, Capital Budgeting decisions, forecasting techniques and elementary Balance Sheet and taxation, business financing, international investments

**Expected outcome .**

A student who has undergone this course would be able to

- i. make investment decisions based on capital budgeting methods in alignment with microeconomic and macroeconomic theories.
- ii. able to analyse the profitability of the firm, economy of operation, determination of price under various market situations with good grasp on the effect of trade cycles in business.
- iii. gain knowledge on Monetary theory, measures by RBI in controlling interest rate and emerging concepts like Bit Coin.
- iv. gain knowledge of elementary accounting concepts used for preparing balance sheet and interpretation of balance sheet

**Text Books**

1. Geetika, Piyali Ghosh and Chodhury, *Managerial Economics*, Tata McGraw Hill, 2015
2. Gregory Mankiw, *Principles of Macroeconomics*, Cengage Learning, 2006.
3. M.Kasi Reddy and S.Saraswathi, *Economics and Financial Accounting*. Prentice Hall of India. New Delhi.

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**References:**

1. Dornbusch, Fischer and Startz, *Macroeconomics*, McGraw Hill, 11th edition, 2010.
2. Khan M Y, *Indian Financial System*, Tata McGraw Hill, 7th edition, 2011.
3. Samuelson, *Managerial Economics*, 6<sup>th</sup> edition, Wiley
4. Snyder C and Nicholson W, *Fundamentals of Microeconomics*, Cengage Learning (India), 2010.
5. Truett, *Managerial Economics: Analysis, Problems, Cases*, 8<sup>th</sup> Edition, Wiley
6. Welch, *Economics: Theory and Practice* 7<sup>th</sup> Edition, Wiley
7. Uma Kapila, *Indian Economy Since Independence, 26th Edition: A Comprehensive and Critical Analysis of India's Economy, 1947-2015*
8. C Rangarajan, *Indian Economy, Essays on monetary and finance*, UBS Publishers'Distributors, 1998
9. A.Ramachandra Aryasri, *Managerial Economics and Financial Analysis*, Tata McGraw-Hill, New Delhi.
10. Dominick Salvatore, *Managerial Economics in Global Economy*, Thomas Western College Publishing, Singapore.
11. I.M .Pandey, *Financial Management*, Vikas Publishing House. New Delhi.
12. Dominick Salvatore, *Theory and Problems of Micro Economic Theory*. Tata Mac Graw-Hill, New Delhi.
13. T.N.Hajela. *Money, Banking and Public Finance*. Anne Books. New Delhi.
14. G.S.Gupta. *Macro Economics-Theory and Applications*. Tata Mac Graw- Hill, New Delhi.
15. Yogesh, Maheswari, *Management Economics* , PHI learning, NewDelhi, 2012
16. Timothy Taylor , *Principles of Economics*, 3<sup>rd</sup>edition, TEXTBOOK MEDIA.
17. Varshney and Maheshwari. *Managerial Economics*. Sultan Chand. New Delhi

**Course Plan**

Module	Contents	Hours	Sem. Exam Marks
I	<b>Business Economics</b> and its role in managerial decision making-meaning-scope-relevance-economic problems-scarcity Vs choice (2 Hrs)-Basic concepts in economics-scarcity, choice, resource allocation- Trade-off-opportunity cost-marginal analysis- marginal utility theory, Law of diminishing marginal utility -production possibility curve (2 Hrs)	4	15%
II	<b>Basics of Micro Economics I</b> Demand and Supply analysis-equilibrium-elasticity (demand and supply) (3 Hrs.) -Production concepts-average product-marginal product-law of variable proportions- Production function-Cobb Douglas function-problems (3 Hrs.)	6	15%
<b>FIRST INTERNAL EXAMINATION</b>			
III	<b>Basics of Micro Economics II</b> Concept of costs-marginal, average, fixed, variable costs-cost curves-shut down point-long run and short run (3 Hrs.)- Break Even Analysis-Problem-Markets-Perfect Competition, Monopoly and Monopolistic Competition, Oligopoly-Cartel and collusion (3 Hrs.).	6	15%
IV	<b>Basics of Macro Economics</b> - Circular flow of income-two sector and multi-sector models- National Income Concepts-Measurement methods-problems-Inflation, deflation (4 Hrs.)-Trade cycles-Money-stock and flow concept-Quantity theory of money-Fischer's Equation and Cambridge Equation -velocity of circulation of money-credit control methods-SLR, CRR, Open Market Operations-Repo and Reverse Repo rate-emerging concepts in money-bit coin (4 Hrs.).	8	15%

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SECOND INTERNAL EXAMINATION			
V	<b>Business Decisions I</b> -Investment analysis-Capital Budgeting-NPV, IRR, Profitability Index, ARR, Payback Period (5 Hrs.)- Business decisions under certainty-uncertainty-selection of alternatives-risk and sensitivity- cost benefit analysis-resource management (4 Hrs.).	9	20%
VI	<b>Business Decisions II</b> Balance sheet preparation-principles and interpretation-forecasting techniques (7 Hrs.)-business financing-sources of capital- Capital and money markets-international financing-FDI, FPI, FII-Basic Principles of taxation-direct tax, indirect tax-GST (2 hrs.).	9	20%
<b>END SEMESTER EXAM</b>			

### Question Paper Pattern

Max. marks: 100, Time: 3 hours

The question paper shall consist of three parts

**Part A**

4 questions uniformly covering modules I and II. Each question carries 10 marks  
Students will have to answer any three questions out of 4 (3X10 marks =30 marks)

**Part B**

4 questions uniformly covering modules III and IV. Each question carries 10 marks  
Students will have to answer any three questions out of 4 (3X10 marks =30 marks)

**Part C**

6 questions uniformly covering modules V and VI. Each question carries 10 marks  
Students will have to answer any four questions out of 6 (4X10 marks =40 marks)

**Note:** In all parts, each question can have a maximum of four sub questions, if needed.



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Course No.	Course Name	L-T-P - Credits	Year of Introduction
CS231	DATA STRUCTURES LAB	0-0-3-1	2016

**Pre-requisite:** CS205 Data structures

**Course Objectives**

1. To implement basic linear and non-linear data structures and their major operations.
2. To implement applications using these data structures.
3. To implement algorithms for various sorting techniques.

**List of Exercises/Experiments :** (Minimum 12 are to be done)

1. Implementation of Stack and Multiple stacks using one dimensional array. \*\*
2. Application problems using stacks: Infix to post fix conversion, postfix and pre-fix evaluation, MAZE problem etc. \*\*
3. Implementation of Queue, DEQUEUE and Circular queue using arrays.
4. Implementation of various linked list operations. \*\*
5. Implementation of stack, queue and their applications using linked list.
6. Implementation of trees using linked list
7. Representation of polynomials using linked list, addition and multiplication of polynomials. \*\*
8. Implementation of binary trees using linked lists and arrays- creations, insertion, deletion and traversal. \*\*
9. Implementation of binary search trees – creation, insertion, deletion, search
10. Application using trees
11. Implementation of sorting algorithms – bubble, insertion, selection, quick (recursive and non-recursive), merge sort (recursive and non-recursive), and heap sort.\*\*
12. Implementation of searching algorithms – linear search, binary search.\*\*
13. Representation of graphs and computing various parameters (in degree, out degree etc.) - adjacency list, adjacency matrix.
14. Implementation of BFS, DFS for each representation.
15. Implementation of hash table using various mapping functions, various collision and overflow resolving schemes.\*\*
16. Implementation of various string operations.

  
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17. Simulation of first-fit, best-fit and worst-fit allocations.

18. Simulation of a basic memory allocator and garbage collector using doubly linked list.

**\*\* mandatory.**

**Expected Outcome:**

Students will be able to:

1. appreciate the importance of structure and abstract data type, and their basic usability in different applications
2. analyze and differentiate different algorithms based on their time complexity.
3. implement linear and non-linear data structures using linked lists.
4. understand and apply various data structure such as stacks, queues, trees, graphs, etc. to solve various computing problems.
5. implement various kinds of searching and sorting techniques, and decide when to choose which technique.
6. identify and use a suitable data structure and algorithm to solve a real world problem.



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Estd.



2014

COURSE CODE	COURSE NAME	L-T-P-C	YEAR OF INTRODUCTION
EC431	COMMUNICATION SYSTEMS LAB (OPTICAL & MICROWAVE)	0-0-3-1	2016
<b>Prerequisite:</b> EC403 Microwave & Radar Engineering, EC405 Optical Communication			
<b>Course objectives:</b>			
<ul style="list-style-type: none"> <li>To provide practical experience in design, testing, and analysis of few electronic devices and circuits used for microwave and optical communication engineering.</li> </ul>			
<b>List of Experiments</b>			
<b>Microwave Experiments: (Minimum Six experiments are mandatory)</b>			
<ol style="list-style-type: none"> <li>GUNN diode characteristics.</li> <li>Reflex Klystron Mode Characteristics.</li> <li>VSWR and Frequency measurement.</li> <li>Verify the relation between Guide wave length, free space wave length and cut off wave length for rectangular wave guide.</li> <li>Measurement of E-plane and H-plane characteristics.</li> <li>Directional Coupler Characteristics.</li> <li>Unknown load impedance measurement using smith chart and verification using transmission line equation.</li> <li>Measurement of dielectric constant for given solid dielectric cell.</li> <li>Antenna Pattern Measurement.</li> <li>Study of Vector Network Analyser</li> </ol>			
<b>Optical Experiments: (Minimum Six Experiments are mandatory)</b>			
<ol style="list-style-type: none"> <li>Measurement of Numerical Aperture of a fiber, after preparing the fiber ends.</li> <li>Study of losses in Optical fiber</li> <li>Setting up of Fiber optic Digital link.</li> <li>Preparation of a Splice joint and measurement of the splice loss.</li> <li>Power vs Current (P-I) characteristics and measure slope efficiency of Laser Diode.</li> <li>Voltage vs Current (V-I) characteristics of Laser Diode.</li> <li>Power vs Current (P-I) characteristics and measure slope efficiency of LED.</li> <li>Voltage vs Current (V-I) characteristics of LED.</li> <li>Characteristics of Photodiode and measure the responsivity.</li> <li>Characteristics of Avalanche Photo Diode (APD) and measure the responsivity.</li> <li>Measurement of fiber characteristics, fiber damage and splice loss/connector loss by OTDR.</li> </ol>			

2014

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Course code	Course Name	L-T-P - Credits	Year of Introduction
EE331	Digital Circuits and Embedded Systems Lab	0-0-3-1	2016
<b>Prerequisite:</b> EE309 Microprocessor and embedded systems			
<b>Course Objectives</b>			
<ul style="list-style-type: none"> <li>To impart practical experience in the design and setup of digital circuits and embedded systems.</li> </ul>			
<b>List of Exercises/Experiments :</b> (Out of 18 experiments listed, 12 experiments are mandatory.)			
<b>DIGITAL CIRCUITS EXPERIMENTS :</b> (at least 7 experiments are mandatory)			
<ol style="list-style-type: none"> <li>Realisation of SOP &amp; POS functions after K map reduction</li> <li>Half adder &amp; Full adder realization using NAND gates</li> <li>4-bit adder/subtractor &amp; BCD adder using IC 7483</li> <li>BCD to decimal decoder and BCD to 7-segment decoder &amp; display</li> <li>Study of multiplexer IC and Realization of combinational circuits using multiplexers.</li> <li>Study of counter ICs (7490, 7493)</li> <li>Design of synchronous up, down &amp; modulo N counters</li> <li>Study of shift register IC 7495, ring counter and Johnsons counter</li> <li>VHDL implementation of full adder, 4 bit magnitude comparator</li> </ol>			
<b>EMBEDDED SYSTEM EXPERIMENTS:</b> (Out of first six, any two experiments using 8085 and any two using 8086. Out of the last 3 experiments, any two experiments using 8051 or any other open source hardware platforms like PIC, Arduino, MSP430, ARM etc) ( at least 5 experiments are mandatory)			
<ol style="list-style-type: none"> <li>Data transfer instructions using different addressing modes and block transfer.</li> <li>Arithmetic operations in binary and BCD-addition, subtraction, multiplication and division</li> <li>Logical instructions- sorting of arrays in ascending and descending order</li> <li>Binary to BCD conversion and vice versa.</li> <li>Interfacing D/A converter- generation of simple waveforms-triangular wave, ramp etc</li> <li>Interfacing A/D converter</li> <li>Square wave generation.</li> <li>LED and LCD display interfacing</li> <li>Motor control</li> </ol>			
<b>Expected outcome.</b>			
The students will be able to			
<ol style="list-style-type: none"> <li>design, setup and analyse various digital circuits.</li> <li>design an embedded system for a particular application</li> </ol>			

  
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Course No.	Course Name	L-T-P-Credits	Year of Introduction
ME231	COMPUTER AIDED MACHINE DRAWING LAB	0-0-3-1	2016

**Course Objectives:**

1. To introduce students to the basics and standards of engineering drawing related to machines and components.
2. To teach students technical skills regarding assembly, production and part drawings.
3. To familiarize students with various limits, fits and tolerances.
4. To help students gain knowledge about standard CAD packages on modeling and drafting.

**Syllabus**

Introduction to Machine Drawing, Drawing Standards, Fits, Tolerances, Production drawings. Introduction to CAD, assembly drawings, etc.

**Expected outcome**

At the end of the course students will be able to

1. Acquire the knowledge of various standards and specifications about standard machine components.
2. Make drawings of assemblies with the help of part drawings given.
3. Ability to select, configure and synthesize mechanical components into assemblies.
4. Apply the knowledge of fits and tolerances for various applications.
5. Able to model components of their choice using CAD software.
6. Get exposure to advanced CAD packages.

**Text Books:**

1. N. D. Bhatt and V.M. Panchal, Machine Drawing, Charotar Publishing House, 2014
2. K C John, Machine Drawing, PHI, 2009
3. P I Vargheese and K C John, Machine Drawing, VIP Publishers, 2011
4. K.L.Narayana, P.Kannaiah & K. Venkata Reddy, Machine Drawing, New Age Publishers, 2009
5. Ajeet Singh, Machine Drawing Includes AutoCAD, Tata McGraw-hill, 2012
6. P S Gill, Machine Drawing, Kataria & Sons, 2009

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Course code	Course Name	L-T-P-Credits	Year of Introduction
HS210	LIFE SKILLS	2-0-2	2016

**Prerequisite : Nil**

**Course Objectives**

- To develop communication competence in prospective engineers.
- To enable them to convey thoughts and ideas with clarity and focus.
- To develop report writing skills.
- To equip them to face interview & Group Discussion.
- To inculcate critical thinking process.
- To prepare them on problem solving skills.
- To provide symbolic, verbal, and graphical interpretations of statements in a problem description.
- To understand team dynamics & effectiveness.
- To create an awareness on Engineering Ethics and Human Values.
- To instill Moral and Social Values, Loyalty and also to learn to appreciate the rights of others.
- To learn leadership qualities and practice them.

**Syllabus**

**Communication Skill:** Introduction to Communication, The Process of Communication, Barriers to Communication, Listening Skills, Writing Skills, Technical Writing, Letter Writing, Job Application, Report Writing, Non-verbal Communication and Body Language, Interview Skills, Group Discussion, Presentation Skills, Technology-based Communication.

**Critical Thinking & Problem Solving:** Creativity, Lateral thinking, Critical thinking, Multiple Intelligence, Problem Solving, Six thinking hats, Mind Mapping & Analytical Thinking.

**Teamwork:** Groups, Teams, Group Vs Teams, Team formation process, Stages of Group, Group Dynamics, Managing Team Performance & Team Conflicts.

**Ethics, Moral & Professional Values:** Human Values, Civic Rights, Engineering Ethics, Engineering as Social Experimentation, Environmental Ethics, Global Issues, Code of Ethics like ASME, ASCE, IEEE.

**Leadership Skills:** Leadership, Levels of Leadership, Making of a leader, Types of leadership, Transactions Vs Transformational Leadership, VUCA Leaders, DART Leadership, Leadership Grid & leadership Formulation.

**Expected outcome**

The students will be able to

- Communicate effectively.
- Make effective presentations.
- Write different types of reports.
- Face interview & group discussion.
- Critically think on a particular problem.
- Solve problems.
- Work in Group & Teams
- Handle Engineering Ethics and Human Values.
- Become an effective leader.

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**Resource Book:**

*Life Skills for Engineers*, Compiled by ICT Academy of Kerala, McGraw Hill Education (India) Private Ltd., 2016

**References:**

- Barun K. Mitra; (2011), "*Personality Development & Soft Skills*", First Edition; Oxford Publishers.
- Kalyana; (2015) "*Soft Skill for Managers*"; First Edition; Wiley Publishing Ltd.
- Larry James (2016); "*The First Book of Life Skills*"; First Edition; Embassy Books.
- Shalini Verma (2014); "*Development of Life Skills and Professional Practice*"; First Edition; Sultan Chand (G/L) & Company
- John C. Maxwell (2014); "*The 5 Levels of Leadership*", Centre Street, A division of Hachette Book Group Inc.

**Course Plan**

Module	Contents	Hours		Sem. Exam Marks
		L	T-P	
I	Need for Effective Communication, Levels of communication; Flow of communication; Use of language in communication; Communication networks; Significance of technical communication, Types of barriers; Miscommunication; Noise; Overcoming measures,	2		See evaluation scheme
	Listening as an active skill; Types of Listeners; Listening for general content; Listening to fill up information; Intensive Listening; Listening for specific information; Developing effective listening skills; Barriers to effective listening skills.		2	
	<b>Technical Writing:</b> Differences between technical and literary style, Elements of style; Common Errors, <b>Letter Writing:</b> Formal, informal and demi-official letters; business letters, <b>Job Application:</b> Cover letter, Differences between bio-data, CV and Resume, <b>Report Writing:</b> Basics of Report Writing; Structure of a report; Types of reports.		4	
	<b>Non-verbal Communication and Body Language:</b> Forms of non-verbal communication; Interpreting body-language cues; Kinesics; Proxemics; Chronemics; Effective use of body language	3		
	<b>Interview Skills:</b> Types of Interviews; Ensuring success in job interviews; Appropriate use of non-verbal communication, <b>Group Discussion:</b> Differences between group discussion and debate; Ensuring success in group discussions, <b>Presentation Skills:</b> Oral presentation and public speaking skills; business presentations, <b>Technology-based Communication:</b> Netiquettes: effective e-mail messages; power-point presentation; enhancing editing skills using computer software.		4	

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<p><b>II</b></p>	<p>Need for Creativity in the 21<sup>st</sup> century, Imagination, Intuition, Experience, Sources of Creativity, Lateral Thinking, Myths of creativity</p> <p>Critical thinking Vs Creative thinking, Functions of Left Brain &amp; Right brain, Convergent &amp; Divergent Thinking, Critical reading &amp; Multiple Intelligence.</p> <p>Steps in problem solving, Problem Solving Techniques, Problem Solving through Six Thinking Hats, Mind Mapping, Forced Connections.</p> <p>Problem Solving strategies, Analytical Thinking and quantitative reasoning expressed in written form, Numeric, symbolic, and graphic reasoning, Solving application problems.</p>	<p>2</p> <p>2</p> <p>2</p>	<p>2</p> <p>2</p> <p>2</p>	
<p><b>III</b></p>	<p>Introduction to Groups and Teams, Team Composition, Managing Team Performance, Importance of Group, Stages of Group, Group Cycle, Group thinking, getting acquainted, Clarifying expectations.</p> <p>Group Problem Solving, Achieving Group Consensus.</p> <p>Group Dynamics techniques, Group vs Team, Team Dynamics, Teams for enhancing productivity, Building &amp; Managing Successful Virtual Teams. Managing Team Performance &amp; Managing Conflict in Teams.</p> <p>Working Together in Teams, Team Decision-Making, Team Culture &amp; Power, Team Leader Development.</p>	<p>3</p> <p>2</p> <p>3</p> <p>2</p>	<p>2</p> <p>2</p> <p>2</p> <p>2</p>	
<p><b>IV</b></p>	<p>Morals, Values and Ethics, Integrity, Work Ethic, Service Learning, Civic Virtue, Respect for Others, Living Peacefully.</p> <p>Caring, Sharing, Honesty, Courage, Valuing Time, Cooperation, Commitment, Empathy, Self-Confidence, Character</p> <p>Spirituality, Senses of 'Engineering Ethics', variety of moral issues, Types of inquiry, moral dilemmas, moral autonomy, Kohlberg's theory, Gilligan's theory, Consensus and controversy, Models of Professional Roles, Theories about right action, Self-interest, customs and religion, application of ethical theories.</p> <p>Engineering as experimentation, engineers as responsible experimenters, Codes of ethics, Balanced outlook on.</p> <p>The challenger case study, Multinational corporations, Environmental ethics, computer ethics,</p>	<p>3</p> <p>2</p> <p>3</p> <p>2</p>	<p>2</p> <p>2</p> <p>2</p> <p>2</p>	<p><i>Leena</i></p> <p><b>Dr. LEENA A. V.</b> <b>PRINCIPAL</b> SREE NARAYANA GURU COLLEGE OF ENGINEERING &amp; TECHNOLOGY, PAYANUR KANNUR</p>

	Weapons development, engineers as managers, consulting engineers, engineers as expert witnesses and advisors, moral leadership, sample code of Ethics like ASME, ASCE, IEEE, Institution of Engineers(India), Indian Institute of Materials Management, Institution of electronics and telecommunication engineers(IETE), India, etc.	3	
V	Introduction, a framework for considering leadership, entrepreneurial and moral leadership, vision, people selection and development, cultural dimensions of leadership, style, followers, crises.	4	
	Growing as a leader, turnaround leadership, gaining control, trust, managing diverse stakeholders, crisis management		2
	Implications of national culture and multicultural leadership Types of Leadership, Leadership Traits.	2	
	Leadership Styles, VUCA Leadership, DART Leadership, Transactional vs Transformational Leaders, Leadership Grid, Effective Leaders, making of a Leader, Formulate Leadership		2
<b>END SEMESTER EXAM</b>			

### EVALUATION SCHEME

#### Internal Evaluation

*(Conducted by the College)*

**Total Marks: 100**

#### Part – A

*(To be started after completion of Module 1 and to be completed by 30<sup>th</sup> working day of the semester)*

1. Group Discussion – Create groups of about 10 students each and engage them on a GD on a suitable topic for about 20 minutes. Parameters to be used for evaluation is as follows;

- |       |                        |   |          |
|-------|------------------------|---|----------|
| (i)   | Communication Skills   | – | 10 marks |
| (ii)  | Subject Clarity        | – | 10 marks |
| (iii) | Group Dynamics         | - | 10 marks |
| (iv)  | Behaviors & Mannerisms | - | 10 marks |

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(Marks: 40)

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## Part – B

*(To be started from 31<sup>st</sup> working day and to be completed before 60<sup>th</sup> working day of the semester)*

2. Presentation Skills – Identify a suitable topic and ask the students to prepare a presentation (preferably a power point presentation) for about 10 minutes. Parameters to be used for evaluation is as follows;

- |       |                           |   |          |
|-------|---------------------------|---|----------|
| (i)   | Communication Skills*     | - | 10 marks |
| (ii)  | Platform Skills**         | - | 10 marks |
| (iii) | Subject Clarity/Knowledge | - | 10 marks |

*(Marks: 30)*

\* Language fluency, audibility, voice modulation, rate of speech, listening, summarizes key learnings etc.

\*\* Postures/Gestures, Smiles/Expressions, Movements, usage of floor area etc.

## Part – C

*(To be conducted before the termination of semester)*

3. Sample Letter writing or report writing following the guidelines and procedures. Parameters to be used for evaluation is as follows;

- |       |                            |   |          |
|-------|----------------------------|---|----------|
| (i)   | Usage of English & Grammar | - | 10 marks |
| (ii)  | Following the format       | - | 10 marks |
| (iii) | Content clarity            | - | 10 marks |

*(Marks: 30)*

**External Evaluation**  
*(Conducted by the University)*

Total Marks: 50

Time: 2 hrs.

## Part – A

### Short Answer questions

There will be one question from each area (five questions in total). Each question should be written in about maximum of 400 words. Parameters to be used for evaluation are as follows;

- |       |                                   |
|-------|-----------------------------------|
| (i)   | Content Clarity/Subject Knowledge |
| (ii)  | Presentation style                |
| (iii) | Organization of content           |

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(Marks: 5 x 6 = 30)

**Part – B**

**Case Study**

The students will be given a case study with questions at the end the students have to analyze the case and answer the question at the end. Parameters to be used for evaluation are as follows;

- (i) Analyze the case situation
- (ii) Key players/characters of the case
- (iii) Identification of the problem (both major & minor if exists)
- (iv) Bring out alternatives
- (v) Analyze each alternative against the problem
- (vi) Choose the best alternative
- (vii) Implement as solution
- (viii) Conclusion
- (ix) Answer the question at the end of the case

(Marks: 1 x 20 = 20)



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Course Code	Course Name	L-T-P-Credits	Year of Introduction
CE431	ENVIRONMENTAL ENGINEERING LAB	0-0-3-1	2016

**Prerequisites: CE405 Environmental Engineering - I**

**Course objectives:**

- To equip the students in doing analysis of water and wastewater samples

**List of Experiments:** (Minimu 10 experiments are mandatory)

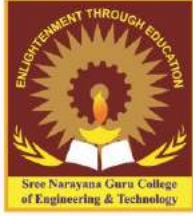
1. To analyse the physical characteristics viz. colour, turbidity, and conductivity of a given water sample and to determine its suitability for drinking purposes
2. To analyse the chemical characteristics of a given water sample viz. pH, acidity, alkalinity for assessing its potability
3. To analyse the chemical characteristics of a given water sample viz. chlorides and sulphates content to assess its suitability for drinking purposes and building construction
4. To determine the Dissolved Oxygen content of a given water sample for checking its potability
5. To determine the available chlorine in a sample of bleaching powder
6. To analyse the various types of solids in a given water sample
7. To determine the BOD of a given wastewater sample
8. To determine the COD of a given wastewater sample
9. To determine the optimum dosage of alum using Jar test
10. To determine the Nitrates / Phosphates in a water sample
11. To determine the iron content of a water sample.
12. To determine the MPN content in a water sample and assess the suitability for potability

**Expected outcome:**

- The students will be able to assess quality of water for various purposes

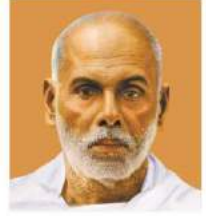
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# **Sree Narayana Guru College of Engineering & Technology**

CHALAKKODE P.O., KOROM, PAYYANUR, KANNUR-670 307



## **2019 SCHEME**



Code.	Course Name	L	T	P	Hrs	Credit
HUT 200	Professional Ethics	2	0	0	2	2

**Preamble:** To enable students to create awareness on ethics and human values.

**Prerequisite:** Nil

**Course Outcomes:** After the completion of the course the student will be able to

CO 1	Understand the core values that shape the ethical behaviour of a professional.
CO 2	Adopt a good character and follow an ethical life.
CO 3	Explain the role and responsibility in technological development by keeping personal ethics and legal ethics.
CO 4	Solve moral and ethical problems through exploration and assessment by established experiments.
CO 5	Apply the knowledge of human values and social values to contemporary ethical values and global issues.

#### Mapping of course outcomes with program outcomes

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO1 0	PO1 1	PO1 2
CO 1								2			2	
CO 2								2			2	
CO 3								3			2	
CO 4								3			2	
CO 5								3			2	

#### Assessment Pattern

Bloom's category	Continuous Assessment Tests		End Semester Exam
	1	2	
Remember	15	15	30
Understood	20	20	40
Apply	15	15	30

#### Mark distribution

Total Marks	CIE	ESE	ESE Duration
150	50	100	3 hours

  
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**Continuous Internal Evaluation Pattern:**

Attendance	: 10 marks
Continuous Assessment Tests (2 Nos)	: 25 marks
Assignments/Quiz	: 15 marks

**End Semester Examination Pattern:** There will be two parts; Part A and Part B. Part A contains 10 questions with 2 questions from each module, having 3 marks for each question. Students should answer all questions. Part B contains 2 questions from each module of which student should answer any one. Each question can have maximum 2 sub-divisions and carry 14 marks.

**Course Level Assessment Questions****Course Outcome 1 (CO1):**

1. Define integrity and point out ethical values.
2. Describe the qualities required to live a peaceful life.
3. Explain the role of engineers in modern society.

**Course Outcome 2 (CO2)**

1. Derive the codes of ethics.
2. Differentiate consensus and controversy.
3. Discuss in detail about character and confidence.

**Course Outcome 3(CO3):**

1. Explain the role of professional's ethics in technological development.
2. Distinguish between self interest and conflicts of interest.
3. Review on industrial standards and legal ethics.

**Course Outcome 4 (CO4):**

1. Illustrate the role of engineers as experimenters.
2. Interpret the terms safety and risk.
3. Show how the occupational crimes are resolved by keeping the rights of employees.

**Course Outcome 5 (CO5):**

1. Exemplify the engineers as managers.
2. Investigate the causes and effects of acid rain with a case study.
3. Explore the need of environmental ethics in technological development.

**Model Question paper**

QP CODE:

Reg No: \_\_\_\_\_

PAGES:3

Name : \_\_\_\_\_

**APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY THIRD/FOURTH SEMESTER  
B.TECH DEGREE EXAMINATION, MONTH & YEAR**

Course Code: HUT 200

Course Name: PROFESSIONAL ETHICS

Max. Marks: 100

Duration: 3 Hours

(2019-Scheme)

**PART A****(Answer all questions, each question carries 3 marks)**

1. Define empathy and honesty.
2. Briefly explain about morals, values and ethics.
3. Interpret the two forms of self-respect.
4. List out the models of professional roles.
5. Indicate the advantages of using standards.
6. Point out the conditions required to define a valid consent?
7. Identify the conflicts of interests with an example?
8. Recall confidentiality.
9. Conclude the features of biometric ethics.
10. Name any three professional societies and their role relevant to engineers.

(10x3 = 30 marks)

**PART B****(Answer one full question from each module, each question carries 14 marks)****MODULE I**

11. a) Classify the relationship between ethical values and law?  
b) Compare between caring and sharing. (10+4 = 14 marks)

**Or**

12. a) Exemplify a comprehensive review about integrity and respect for others.

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b) Discuss about co-operation and commitment.

(8+6 = 14 marks)

## MODULE II

13.a) Explain the three main levels of moral developments, devised by Kohlberg.

b) Differentiate moral codes and optimal codes.

(10+4 = 14 marks)

Or

14. a) Extrapolate the duty ethics and right ethics.

b) Discuss in detail the three types of inquiries in engineering ethics

(8+6 = 14 marks)

## MODULE III

15.a) Summarize the following features of morally responsible engineers.

(i) Moral autonomy

(ii) Accountability

b) Explain the rights of employees

(8+6 = 14 marks)

Or

16. a) Explain the reasons for Chernobyl mishap ?

b) Describe the methods to improve collegiality and loyalty.

(8+6 = 14 marks)

## MODULE IV

17.a) Execute collegiality with respect to commitment, respect and connectedness.

b) Identify conflicts of interests with an example.

(8+6 = 14 marks)

Or

18. a) Explain in detail about professional rights and employee rights.

b) Exemplify engineers as managers.

## MODULE V

19.a) Evaluate the technology transfer and appropriate technology.

b) Explain about computer and internet ethics.

(8+6 = 14 marks)

Or

20. a) Investigate the causes and effects of acid rain with a case study.

b) Conclude the features of ecocentric and biocentric ethics.

(8+6 = 14 marks)

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## Syllabus

### **Module 1 – Human Values.**

Morals, values and Ethics – Integrity- Academic integrity-Work Ethics- Service Learning- Civic Virtue- Respect for others- Living peacefully- Caring and Sharing- Honestly- courage-Cooperation commitment- Empathy-Self Confidence -Social Expectations.

### **Module 2 - Engineering Ethics & Professionalism.**

Senses of Engineering Ethics - Variety of moral issues- Types of inquiry- Moral dilemmas –Moral Autonomy – Kohlberg’s theory- Gilligan’s theory- Consensus and Controversy-Profession and Professionalism- Models of professional roles-Theories about right action –Self interest-Customs and Religion- Uses of Ethical Theories.

### **Module 3- Engineering as social Experimentation.**

Engineering as Experimentation – Engineers as responsible Experimenters- Codes of Ethics- Plagiarism- A balanced outlook on law - Challenges case study- Bhopal gas tragedy.

### **Module 4- Responsibilities and Rights.**

Collegiality and loyalty – Managing conflict- Respect for authority- Collective bargaining- Confidentiality- Role of confidentiality in moral integrity-Conflicts of interest- Occupational crime- Professional rights- Employee right- IPR Discrimination.

### **Module 5- Global Ethical Issues.**

Multinational Corporations- Environmental Ethics- Business Ethics- Computer Ethics -Role in Technological Development-Engineers as Managers- Consulting Engineers- Engineers as Expert witnesses and advisors-Moral leadership.

### **Text Book**

1. M Govindarajan, S Natarajan and V S Senthil Kumar, Engineering Ethics, PHI Learning Private Ltd, New Delhi,2012.
2. R S Naagarazan, A text book on professional ethics and human values, New age international (P) limited ,New Delhi,2006.

### **Reference Books**

1. Mike W Martin and Roland Schinzinger, Ethics in Engineering,4<sup>th</sup> edition, Tata McGraw Hill Publishing Company Pvt Ltd, New Delhi,2014.
2. Charles D Fleddermann, Engineering Ethics, Pearson Education/ Prentice Hall of India, New Jersey,2004.
3. Charles E Harris, Michael S Protchard and Michael J Rabins, Engineering Ethics- Concepts and cases, Wadsworth Thompson Learning, United states,2005.
4. [http://www.slideword.org/slidestag.aspx/human-values-and-Professional-ethics.](http://www.slideword.org/slidestag.aspx/human-values-and-Professional-ethics)

**Course Contents and Lecture Schedule**

SL.No	Topic	No. of Lectures
		<b>25</b>
<b>1</b>	<b>Module 1 – Human Values.</b>	
1.1	Morals, values and Ethics, Integrity, Academic Integrity, Work Ethics	1
1.2	Service Learning, Civic Virtue, Respect for others, Living peacefully	1
1.3	Caring and Sharing, Honesty, Courage, Co-operation commitment	2
1.4	Empathy, Self Confidence, Social Expectations	1
<b>2</b>	<b>Module 2- Engineering Ethics &amp; Professionalism.</b>	
2.1	Senses of Engineering Ethics, Variety of moral issues, Types of inquiry	1
2.2	Moral dilemmas, Moral Autonomy, Kohlberg's theory	1
2.3	Gilligan's theory, Consensus and Controversy, Profession & Professionalism, Models of professional roles, Theories about right action	2
2.4	Self interest-Customs and Religion, Uses of Ethical Theories	1
<b>3</b>	<b>Module 3- Engineering as social Experimentation.</b>	
3.1	Engineering as Experimentation, Engineers as responsible Experimenters	1
3.2	Codes of Ethics, Plagiarism, A balanced outlook on law	2
3.3	Challenger case study, Bhopal gas tragedy	2
<b>4</b>	<b>Module 4- Responsibilities and Rights.</b>	
4.1	Collegiality and loyalty, Managing conflict, Respect for authority	1
4.2	Collective bargaining, Confidentiality, Role of confidentiality in moral integrity, Conflicts of interest	2
4.3	Occupational crime, Professional rights, Employee right, IPR Discrimination	2
<b>5</b>	<b>Module 5- Global Ethical Issues.</b>	
5.1	Multinational Corporations, Environmental Ethics, Business Ethics, Computer Ethics	2
5.2	Role in Technological Development, Moral leadership	1
5.3	Engineers as Managers, Consulting Engineers, Engineers as Expert witnesses and advisors	2

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CODE	COURSE NAME	CATEGORY	L	T	P	CREDIT
MCN202	CONSTITUTION OF INDIA		2	0	0	NIL

**Preamble:**

The study of their own country constitution and studying the importance environment as well as understanding their own human rights help the students to concentrate on their day to day discipline. It also gives the knowledge and strength to face the society and people.

**Prerequisite:** Nil

**Course Outcomes:** After the completion of the course the student will be able to

CO 1	Explain the background of the present constitution of India and features.
CO 2	Utilize the fundamental rights and duties.
CO 3	Understand the working of the union executive, parliament and judiciary.
CO 4	Understand the working of the state executive, legislature and judiciary.
CO 5	Utilize the special provisions and statutory institutions.
CO 6	Show national and patriotic spirit as responsible citizens of the country

**Mapping of course outcomes with program outcomes**

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
CO 1						2	2	2		2		
CO 2						3	3	3		3		
CO 3						3	2	3		3		
CO 4						3	2	3		3		
CO 5						3	2	3		3		
CO 6						3	3	3		2		

**Assessment Pattern**

Bloom's Category	Continuous Assessment Tests		End Semester Examination
	1	2	
Remember	20	20	40
Understand	20	20	40
Apply	10	10	20
Analyse			

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Evaluate			
Create			

**Mark distribution**

Total Marks	CIE	ESE	ESE Duration
150	50	100	3 hours

**Continuous Internal Evaluation Pattern:**

Attendance	: 10 marks
Continuous Assessment Test (2 numbers)	: 25 marks
Assignment/Quiz/Course project	: 15 marks

**End Semester Examination Pattern:** There will be two parts; Part A and Part B. Part A contain 10 questions with 2 questions from each module, having 3 marks for each question. Students should answer all questions. Part B contains 2 questions from each module of which student should answer any one. Each question can have maximum 2 sub-divisions and carry 14 marks.

**Course Level Assessment Questions****Course Outcome 1 (CO1):**

- 1 Discuss the historical background of the Indian constitution.
- 2 Explain the salient features of the Indian constitution.
- 3 Discuss the importance of preamble in the implementation of constitution.

**Course Outcome 2 (CO2)**

- 1 What are fundamental rights ? Examine each of them.
- 2 Examine the scope of freedom of speech and expression underlying the constitution.
- 3 The thumb impression of an accused is taken by the police against his will. He contends that this is a violation of his rights under Art 20(3) of the constitution. Decide.

**Course Outcome 3(CO3):**

- 1 Explain the powers of the President to suspend the fundamental rights during emergency.



2 Explain the salient features of appeal by special leave.

3. List the constitutional powers of President.

**Course Outcome 4 (CO4):**

1 Discuss the constitutional powers of Governor.

2 Examine the writ jurisdiction of High court.

3 Discuss the qualification and disqualification of membership of state legislature.

**Course Outcome 5 (CO5):**

1 Discuss the duties and powers of comptroller of auditor general.

2 Discuss the proclamation of emergency.

3 A state levies tax on motor vehicles used in the state, for the purpose of maintaining roads in the state. X challenges the levy of the tax on the ground that it violates the freedom of interstate commerce guaranteed under Art 301. Decide.

**Course Outcome 6 (CO6):**

1 Explain the advantages of citizenship.

2 List the important principles contained in the directive principles of state policy.

3 Discuss the various aspects contained in the preamble of the constitution

**Model Question paper**

**PART A**

(Answer all questions. Each question carries 3 marks)

1 Define and explain the term constitution.

2 Explain the need and importance of Preamble.

3 What is directive principle of state policy?

4 Define the State.

5 List the functions of Attorney general of India.

  
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- 6 Explain the review power of Supreme court.
- 7 List the qualifications of Governor.
- 8 Explain the term and removal of Judges in High court.
- 9 Explain the powers of public service commission.
- 10 List three types of emergency under Indian constitution.

(10X3=30marks)

**PART B**

(Answer on question from each module. Each question carries 14 marks)

**Module 1**

- 11 Discuss the various methods of acquiring Indian citizenship.
- 12 Examine the salient features of the Indian constitution.

**Module 2**

- 13 A high court passes a judgement against X. X desires to file a writ petition in the supreme court under Art32, on the ground that the judgement violates his fundamental rights. Advise him whether he can do so.
- 14 What is meant by directive principles of State policy? List the directives.

**Module3**

- 15 Describe the procedure of election and removal of the President of India.
- 16 Supreme court may in its discretion grant special leave to appeal. Examine the situation.

**Module 4**

- 17 Discuss the powers of Governor.
- 18 X filed a writ petition under Art 226 which was dismissed. Subsequently, he filed a writ petition under Art 32 of the constitution, seeking the same remedy. The Government argued that the writ petition should be dismissed, on the ground of res judicata. Decide.

**Module 5**

  
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19 Examine the scope of the financial relations between the union and the states.

20 Discuss the effects of proclamation of emergency.

(14X5=70marks)

### Syllabus

**Module 1** Definition, historical back ground, features, preamble, territory, citizenship.

**Module 2** State, fundamental rights, directive principles, duties.

**Module 3** The machinery of the union government.

**Module 4** Government machinery in the states

**Module 5** The federal system, Statutory Institutions, miscellaneous provisions.

### Text Books

1 D D Basu, Introduction to the constitution of India, Lexis Nexis, New Delhi, 24e, 2019

2 PM Bhakshi, The constitution of India, Universal Law, 14e, 2017

### Reference Books

1 Ministry of law and justice, The constitution of India, Govt of India, New Delhi, 2019.

2 JN Pandey, The constitutional law of India, Central Law agency, Allahabad, 51e, 2019

3 MV Pylee, India's Constitution, S Chand and company, New Delhi, 16e, 2016

### Course Contents and Lecture Schedule

No	Topic	No. of Lectures
1	<b>Module 1</b>	
1.1	Definition of constitution, historical back ground, salient features of the constitution.	1
1.2	Preamble of the constitution, union and its territory.	1
1.3	Meaning of citizenship, types, termination of citizenship.	2
2	<b>Module 2</b>	
2.1	Definition of state, fundamental rights, general nature, classification, right to equality ,right to freedom , right against exploitation	2

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2.2	Right to freedom of religion, cultural and educational rights, right to constitutional remedies. Protection in respect of conviction for offences.	2
2.3	Directive principles of state policy, classification of directives, fundamental duties.	2
3	<b>Module 3</b>	
3.1	The Union executive, the President, the vice President, the council of ministers, the Prime minister, Attorney-General, functions.	2
3.2	The parliament, composition, Rajya sabha, Lok sabha, qualification and disqualification of membership, functions of parliament.	2
3.3	Union judiciary, the supreme court, jurisdiction, appeal by special leave.	1
4	<b>Module 4</b>	
4.1	The State executive, the Governor, the council of ministers, the Chief minister, advocate general, union Territories.	2
4.2	The State Legislature, composition, qualification and disqualification of membership, functions.	2
4.3	The state judiciary, the high court, jurisdiction, writs jurisdiction.	1
5	<b>Module 5</b>	
5.1	Relations between the Union and the States, legislative relation, administrative relation, financial Relations, Inter State council, finance commission.	1
5.2	Emergency provision, freedom of trade commerce and inter course, comptroller and auditor general of India, public Services, public service commission, administrative Tribunals.	2
5.3	Official language, elections, special provisions relating to certain classes, amendment of the Constitution.	2

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HUN 101	LIFE SKILLS	CATEGORY	L	T	P	CREDIT	YEAR OF INTRODUCTION
		MNC	2	0	2	---	2019

**Preamble:** Life skills are those competencies that provide the means for an individual to be resourceful and positive while taking on life's vicissitudes. Development of one's personality by being aware of the self, connecting with others, reflecting on the abstract and the concrete, leading and generating change, and staying rooted in time-tested values and principles is being aimed at. This course is designed to enhance the employability and maximize the potential of the students by introducing them to the principles that underly personal and professional success, and help them acquire the skills needed to apply these principles in their lives and careers.

**Prerequisite:** None

**Course Outcomes:** After the completion of the course the student will be able to

CO 1	Define and Identify different life skills required in personal and professional life
CO 2	Develop an awareness of the self and apply well-defined techniques to cope with emotions and stress.
CO 3	Explain the basic mechanics of effective communication and demonstrate these through presentations.
CO 4	Take part in group discussions
CO 5	Use appropriate thinking and problem solving techniques to solve new problems
CO 6	Understand the basics of teamwork and leadership

**Mapping of course outcomes with program outcomes**

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
CO 1						2		1	2	2	1	3
CO 2									3			2
CO 3						1			1	3		
CO 4										3		1
CO 5		3	2	1								
CO 6						1			3			

**Mark distribution**

Total Marks	CIE	ESE	ESE Duration
100	50	50	2 hours

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### Continuous Internal Evaluation

Total Marks: 50

Attendance	: 10 marks
Regular assessment	: 15 marks
Series test (one test only, should include first three modules)	: 25 marks

### Regular assessment

➤ Group Discussion (Marks: 9)

Create groups of about 6 students each and engage them on a GD on a suitable topic for about 20 minutes. Parameters to be used for evaluation are as follows:

- Communication Skills : 3 marks
- Subject Clarity : 2 marks
- Group Dynamics : 2 marks
- Behaviours & Mannerisms : 2 marks

➤ Presentation Skills (Marks: 6)

Identify a suitable topic and ask the students to prepare a presentation (preferably a power point presentation) for about 10 minutes. Parameters to be used for evaluation are as follows:

- Communication Skills : 2 marks
- Platform Skills : 2 marks
- Subject Clarity/Knowledge : 2 marks

### End Semester Examination

Total Marks: 50

Time: 2 hrs.

#### Part A: Short answer question (25 marks)

There will be one question from each MODULE (five questions in total, five marks each). Each question should be written in about maximum of 400 words. Parameters to be used for evaluation are as follows:

- (i) Content Clarity/Subject Knowledge
- (ii) Presentation style
- (iii) Organization of content

#### Part B: Case Study (25 marks)

The students will be given a case study with questions at the end. The students have to analyze the case and answer the question at the end. Parameters to be used for evaluation are as follows:

- (i) Analyze the case situation
- (ii) Key players/characters of the case
- (iii) Identification of the problem (both major & minor if exists)
- (iv) Bring out alternatives
- (v) Analyze each alternative against the problem
- (vi) Choose the best alternative
- (vii) Implement as solution
- (viii) Conclusion

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(ix) Answer the question at the end of the case

### Course Level Assessment Questions

#### Course Outcome 1 (CO1):

1. List 'life skills' as identified by WHO
2. What do you mean by effective communication?
3. What are the essential life skills required by a professional?

#### Course Outcome 2 (CO2)

1. Identify an effective means to deal with workplace stress.
2. How can a student apply journaling to stress management?
3. What is the PATH method? Describe a situation where this method can be used effectively.

#### Course Outcome 3(CO3):

1. Identify the communication network structure that can be observed in the given situations. Describe them.
  - (a) A group discussion on development.
  - (b) An address from the Principal regarding punctuality.
  - (c) A reporter interviewing a movie star.
  - (d) Discussing the answers of a test with a group of friends.
2. Elucidate the importance of non-verbal communication in making a presentation
3. Differentiate between kinesics, proxemics, and chronemics with examples.

#### Course Outcome 4 (CO4):

1. How can a participant conclude a group discussion effectively?
2. 'Listening skills are essential for effectively participating in a group discussion.' Do you agree? Substantiate your answer.

#### Course Outcome 5 (CO5):

1. Illustrate the creative thinking process with the help of a suitable example
2. Translate the following problem from verbal to graphic form and find the solution : *In a quiz, Ananth has 50 points more than Bimal, Chinmay has 60 points less than Ananth, and Dharini is 20 points ahead of Chinmay. What is the difference in points between Bimal and Dharini?*

3. List at least five ways in which the problem "How to increase profit?" can be redefined

**Course Outcome 6 (CO6):**

1. A group of engineers decided to brainstorm a design issue on a new product. Since no one wanted to disagree with the senior members, new ideas were not flowing freely. What group dynamics technique would you suggest to avoid this 'groupthink'? Explain the procedure.
2. "A group focuses on individual contribution, while a team must focus on synergy." Explain.
3. Identify the type of group formed / constituted in each of the given situations
  - a) A Police Inspector with subordinates reporting to him
  - b) An enquiry committee constituted to investigate a specific incident
  - c) The Accounts Department of a company
  - d) A group of book lovers who meet to talk about reading

**Syllabus**

**Module 1**

Overview of Life Skills: Meaning and significance of life skills, Life skills identified by WHO: Self-awareness, Empathy, Critical thinking, Creative thinking, Decision making, problem solving, Effective communication, interpersonal relationship, coping with stress, coping with emotion.

Life skills for professionals: positive thinking, right attitude, attention to detail, having the big picture, learning skills, research skills, perseverance, setting goals and achieving them, helping others, leadership, motivation, self-motivation, and motivating others, personality development, IQ, EQ, and SQ

**Module 2**

Self-awareness: definition, need for self-awareness; Coping With Stress and Emotions, Human Values, tools and techniques of SA: questionnaires, journaling, reflective questions, meditation, mindfulness, psychometric tests, feedback.

Stress Management: Stress, reasons and effects, identifying stress, stress diaries, the four A's of stress management, techniques, Approaches: action-oriented, emotion-oriented, acceptance-oriented, resilience, Gratitude Training,

Coping with emotions: Identifying and managing emotions, harmful ways of dealing with emotions, PATH method and relaxation techniques.

  
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Morals, Values and Ethics: Integrity, Civic Virtue, Respect for Others, Living Peacefully. Caring, Sharing, Honesty, Courage, Valuing Time, Time management, Co operation, Commitment, Empathy, Self-Confidence, Character, Spirituality, Avoiding Procrastination, Sense of Engineering Ethics.

### **Module 3**

21<sup>st</sup> century skills: Creativity, Critical Thinking, Collaboration, Problem Solving, Decision Making, Need for Creativity in the 21st century, Imagination, Intuition, Experience, Sources of Creativity, Lateral Thinking, Myths of creativity, Critical thinking Vs Creative thinking, Functions of Left Brain & Right brain, Convergent & Divergent Thinking, Critical reading & Multiple Intelligence.

Steps in problem solving: Problem Solving Techniques, Six Thinking Hats, Mind Mapping, Forced Connections. Analytical Thinking, Numeric, symbolic, and graphic reasoning. Scientific temperament and Logical thinking.

### **Module 4**

Group and Team Dynamics: Introduction to Groups: Composition, formation, Cycle, thinking, Clarifying expectations, Problem Solving, Consensus, Dynamics techniques, Group vs Team, Team Dynamics, Virtual Teams. Managing team performance and managing conflicts, Intrapreneurship.

### **Module 5**

Leadership: Leadership framework, entrepreneurial and moral leadership, vision, cultural dimensions. Growing as a leader, turnaround leadership, managing diverse stakeholders, crisis management. Types of Leadership, Traits, Styles, VUCA Leadership, Levels of Leadership, Transactional vs Transformational Leaders, Leadership Grid, Effective Leaders.

### **Lab Activities**

#### **Verbal**

Effective communication and Presentation skills.

Different kinds of communication; Flow of communication; Communication networks, Types of barriers; Miscommunication

Introduction to presentations and group discussions.

Learning styles: visual, aural, verbal, kinaesthetic, logical, social, solitary; Previewing, KWL table, active listening, REAP method

Note-taking skills: outlining, non-linear note-taking methods, Cornell notes, three column note taking.

Memory techniques: mnemonics, association, flashcards, keywords, outlines, spider diagrams and mind maps, spaced repetition.

Time management: auditing, identifying time wasters, managing distractions, calendars and checklists; Prioritizing - Goal setting, SMART goals; Productivity tools and apps, Pomodoro technique.

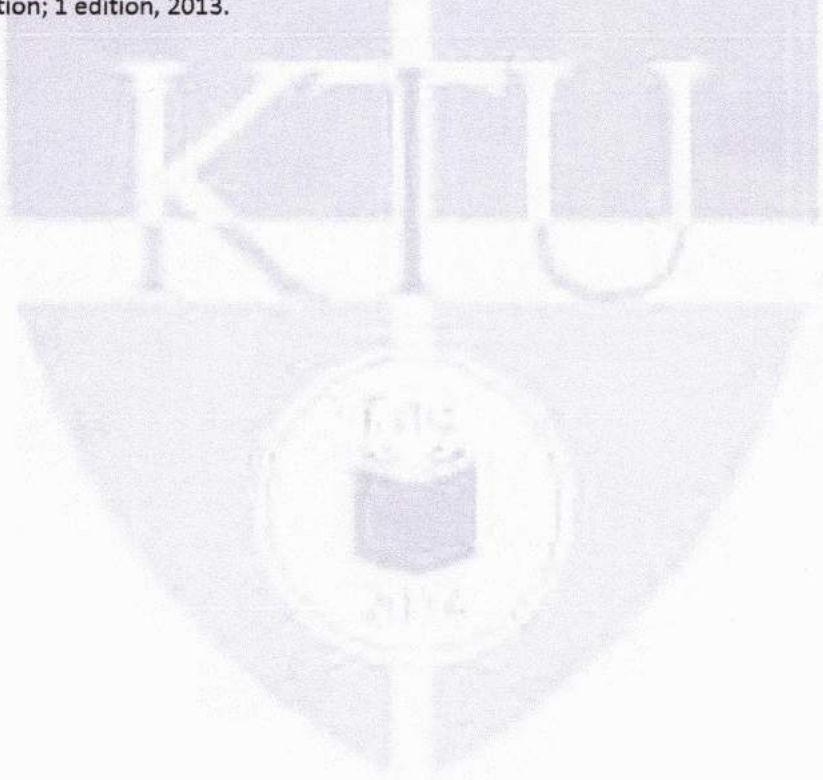
#### **Non Verbal:**

Non-verbal Communication and Body Language: Forms of non-verbal communication; Interpreting body-language cues; Kinesics; Proxemics; Chronemics; Effective use of body language, Communication in a multi cultural environment.

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### Reference Books

1. Shiv Khera, You Can Win, Macmillan Books, New York, 2003.
2. Barun K. Mitra, "Personality Development & Soft Skills", Oxford Publishers, Third impression, 2017.
3. ICT Academy of Kerala, "Life Skills for Engineers", McGraw Hill Education (India) Private Ltd., 2016.
4. Caruso, D. R. and Salovey P, "The Emotionally Intelligent Manager: How to Develop and Use the Four Key Emotional Skills of Leadership", John Wiley & Sons, 2004.
5. Kalyana, "Soft Skill for Managers"; First Edition; Wiley Publishing Ltd, 2015.
6. Larry James, "The First Book of Life Skills"; First Edition, Embassy Books, 2016.
7. Shalini Verma, "Development of Life Skills and Professional Practice"; First Edition; Sultan Chand (G/L) & Company, 2014.
8. Daniel Goleman, "Emotional Intelligence"; Bantam, 2006.
9. Remesh S., Vishnu R.G., "Life Skills for Engineers", Ridhima Publications, First Edition, 2016.
10. Butterfield Jeff, "Soft Skills for Everyone", Cengage Learning India Pvt Ltd; 1 edition, 2011.
11. Training in Interpersonal Skills: Tips for Managing People at Work, Pearson Education, India; 6 edition, 2015.
12. The Ace of Soft Skills: Attitude, Communication and Etiquette for Success, Pearson Education; 1 edition, 2013.



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# ELECTRICAL AND ELECTRONICS ENGINEERING

CODE	COURSE NAME	CATEGORY	L	T	P	CREDIT
<b>EEL201</b>	<b>CIRCUITS AND MEASUREMENTS LAB</b>	<b>PCC</b>	<b>0</b>	<b>0</b>	<b>3</b>	<b>2</b>

**Preamble** : This laboratory course is designed to train the students to familiarize and practice various measuring instruments and different transducers for measurement of physical parameters. Students will also be introduced to a team working environment where they develop the necessary skills for planning, preparing and implementing basic instrumentation systems.

**Prerequisite** : Basic Electrical Engineering

**Course Outcomes** : After the completion of the course the student will be able to

<b>CO 1</b>	Analyse voltage current relations of RLC circuits
<b>CO 2</b>	Verify DC network theorems by setting up various electric circuits
<b>CO 3</b>	Measure power in a single and three phase circuits by various methods
<b>CO 4</b>	Calibrate various meters used in electrical systems
<b>CO 5</b>	Determine magnetic characteristics of different electrical devices
<b>CO 6</b>	Analyse the characteristics of various types of transducer systems
<b>CO 7</b>	Determine electrical parameters using various bridges
<b>CO 8</b>	Analyse the performance of various electronic devices for an instrumentation systems and, to develop the team management and documentation capabilities.

### Mapping of course outcomes with program outcomes

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
<b>CO 1</b>	3	3	2						2			3
<b>CO 2</b>	3	3	-	-	-	-	-	-	2	-	-	3
<b>CO 3</b>	3	3	-	-	-	-	-	-	2	-	-	3
<b>CO 4</b>	3	3	2	-	-	-	-	-	2	-	-	3
<b>CO 5</b>	3	3	-	-	-	-	-	-	2	-	-	3
<b>CO 6</b>	3	3	2	-	-	-	-	-	2	-	-	3
<b>CO 7</b>	3	3	-	-	-	-	-	-	2	-	-	3
<b>CO 8</b>	3	3	3	3	2	2	-	-	3	3	3	3

### ASSESSMENT PATTERN:

#### Mark distribution:

Total Marks	CIE marks	ESE marks	ESE Duration
<b>150</b>	<b>75</b>	<b>75</b>	<b>3 hours</b>

#### Continuous Internal Evaluation (CIE) Pattern:

Attendance	Regular Lab work	Internal Test	Course Project	Total
15	30	25	5	75

Internal Test Evaluation (Immediately before the second series test)

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**End Semester Examination (ESE) Pattern:**

The following guidelines should be followed regarding award of marks

- |  |            |
|--|------------|
| (a) Preliminary work   | : 15 Marks |
| (b) Implementing the work/Conducting the experiment                              | : 10 Marks |
| (c) Performance, result and inference (usage of equipments and trouble shooting) | : 25 Marks |
| (d) Viva voce  | : 20 marks |
| (e) Record   | : 5 Marks  |

**General instructions** : Practical examination is to be conducted immediately after the second series test after conducting 12 experiments from the list of experiments given below. Evaluation is a serious process that is to be conducted under the equal responsibility of both the internal and external examiners. The number of candidates evaluated per day should not exceed 20. Students shall be allowed for the University examination only on submitting the duly certified record. The external examiner shall endorse the record.

**LIST OF EXPERIMENTS:**

(12 experiments are mandatory)

1. Verification of Superposition theorem and Thevenin's theorem.
2. Determination of impedance, admittance and power factor in RLC series/ parallel circuits.
3. 3-phase power measurement using one wattmeter and two-wattmeter methods, and determination of reactive/apparent power drawn.
4. Resistance measurement using Kelvin's Double Bridge and Wheatstone's Bridge and extension of range of voltmeters and ammeters.
5. Extension of instrument range by using Instrument transformers (CT and PT)
6. Calibration of ammeter, voltmeter, wattmeter using Potentiometers
7. Calibration of 1-phase Energy meter at various power factors (minimum 4 conditions)
8. Calibration of 3-phase Energy meter using standard wattmeter
9. Determination of B-H curve,  $\mu$ -H curve and  $\mu$ -B curve of a magnetic specimen
10. Measurement of Self inductance, Mutual inductance and Coupling coefficient of a 1-phase transformer
11. a. Measurement of Capacitance using AC bridge  
b. Setup an instrumentation amplifier using Opamps.
12. Determination of characteristics of LVDT, Strain gauge and Load-cell.
13. Determination of characteristics of Thermistor, Thermocouple and RTD
14. Verification of loading effect in ammeters and voltmeters with current measurement using Clamp on meter.

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**15. Demo Experiments/Simulation study:**

- (a) Measurement of energy using TOD meter
- (b) Measurement of electrical variables using DSO
- (c) Harmonic analysers
- (d) Simulation of Circuits using software platform
- (e) Computer interfaced measurements of circuit parameters.

**Mandatory Group Project Work :** Students have to do a mandatory micro project (group size not more than 5 students) to realise a functional instrumentation system. A report also is to be submitted. Performance can be evaluated along with the internal test and a maximum of 5 marks shall be awarded.

Example projects (Instrumentation system with sensors, alarm, display units etc)

1. Temperature Monitoring System.
2. Gas / Fire smoke Detection Systems.
3. Simulation using LabVIEW, PLC or Similar Softwares.

**Reference Books:**

1. A. K. Sawhney: A course in Electrical and Electronic Measurements & Instrumentation, Dhanpat Rai Publishers
2. J. B. Gupta: A course in Electrical & Electronic Measurement & Instrumentation., S. K. Kataria & Sons Publishers
3. Kalsi H. S.: Electronic Instrumentation, 3/e, Tata McGraw Hill, New Delhi.



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CEL 201	CIVIL ENGINEERING PLANNING & DRAFTING LAB	CATEGORY	L	T	P	CREDIT	YEAR OF INTRODUCTION
		PCC	0	0	3	2	2019

**Preamble:** The course is designed to introduce the fundamentals of Civil Engineering drawing and understand the principles of planning. The students will be able to learn the drafting of buildings manually and using drafting software such as AutoCAD.

**Prerequisite:** ENGINEERING GRAPHICS

**Course Outcomes and their assessment:** After the completion of the course, the student will be able to:

Course Outcome (CO)	Course Outcome Description	CO assessment strategy
CO 1	Illustrate ability to organise civil engineering drawings systematically and professionally	Assessment of the overall organisation of the drawing, labels and templates used.
CO 2	Prepare building drawings as per the specified guidelines.	Application of guidelines for functional planning of building unit.
CO 3	Assess a complete building drawing to include all necessary information	Level of incorporation of Guidelines specified by NBC, meeting the requirement of building rules specified by local bodies of administration.
CO 4	Create a digital form of the building plan using any drafting software	Evaluation of the printouts of prepared building plan

**Mapping of course outcomes (COs) with program outcomes (POs)**

CO/PO	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
CO 1	3	-	-	-	-	-	-	2	3	3	-	-
CO 2	3	-	-	-	-	-	-	2	3	3	-	-
CO 3	3	-	-	-	-	-	-	2	3	3	-	-
CO 4	3	-	-	-	-	-	-	2	2	3	-	-

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**List of Experiments (Any 12 experiments out of 15 need to be performed mandatorily. Manual drafting and drafting using computer aided drafting software is mandatory for the experiments)**

1. Draw sectional details and elevation of paneled doors
2. Draw sectional details and elevation of glazed windows and ventilators in wood.
3. Draw sectional details , detailing on fixing arrangement and elevation of steel windows.
4. Draw elevation, section and detailing of connection between members, arrangement for fixing at the support for steel roof truss.
5. Draw plan, section and elevation of dog legged staircase.
6. Draw sectional details of a load bearing wall over strip footing, RCC Column over isolated footing and pile footing with pile cap.
7. Draw plan, section and elevation of single storied residential buildings with flat roof.
8. Draw plan, section and elevation of two storied residential building.
9. Draw plan , section and elevation of a community hall having corrugated GI sheet roof.
10. Prepare a site plan and service plans per latest building rules (KPBR or KMBR)
11. Prepare detailed drawing on building services (for single and two storied buildings only) and on-site wastewater disposal systems like septic tank and soak pit.
12. Draw plan, section and elevation of multi-storied framed buildings.
13. Draw plan, section and elevation of a public buildings—office complex, public health centre, post office, bank etc
14. Draw plan, section and elevation of an industrial building with corrugated GI steel roof and PEB based walling elements.
15. Create 3D model of a two storied residential building and render the model.

**References**

- 1.** National Building Code of India
- 2.** Kerala panchayat building rules, 2019
- 3.** Kerala Municipality building rules, 2019
- 4.** Dr. Balagopal T.S. Prabhu, Building Drawing and Detailing, Spades Publishers, Calicut
- 5.** AutoCAD Essentials, Autodesk official Press, John Wiley & Sons, USA
- 6.** Shah, M.G., Kale, C. M. and Patki, S.Y. Building Drawing With An Intergrated Approach to Built Environment, Tata McGraw Hill Publishing Company Limited, New Delhi

**Mark distribution**

Total Marks	CIE	ESE	ESE Duration
150	75	75	2.5 hours

**Continuous Internal Evaluation Pattern:**

Marks for 12 exercises using manual drafting in A4 Paper : **50 marks**

Marks for 12 exercises using computer aided drafting software in A3/A4 paper: **25 marks**

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COs	Assessment Strategy	Marking Criteria	Marks
CO 1	Assessment of the overall organisation of the drawing, labels and templates used.	Marks to be awarded based on the initial preparations displayed in manual drawing	10
CO 2	Application of guidelines for functional planning of building unit.	Marks to be awarded based on the prepared plan of the building	20
CO 3	Level of incorporation of Guidelines specified by NBC, meeting the requirement of building rules specified by local bodies of administration.	Marks to be awarded based on the checklists of assessment for the prepared plan of the building	20
CO 4	Evaluation of the printouts of prepared building plan	Marks to be awarded based on the printout of the final plan of the building	25

**End Semester Examination Pattern:** ESE will be of 2.5 hours duration on A2 size answer booklet and will be for 75 marks. (only manual drafting for ESE)

  
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CSL 204	OPERATING SYSTEMS LAB	CATEGORY	L	T	P	CREDIT	YEAR OF
							INTRODUCTION
		PCC	0	0	3	2	2019

**Preamble:** The course aims to offer students a hands-on experience on Operating System concepts using a constructivist approach and problem-oriented learning. Operating systems are the fundamental part of every computing device to run any type of software.

**Prerequisite:** Topics covered in the courses are **Data Structures (CST 201)** and **Programming in C (EST 102)**

**Course Outcomes:**

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

CO1	Illustrate the use of systems calls in Operating Systems. <b>(Cognitive knowledge: Understand)</b>
CO2	Implement Process Creation and Inter Process Communication in Operating Systems. <b>(Cognitive knowledge: Apply)</b>
CO3	Implement First Come First Served, Shortest Job First, Round Robin and Priority-based CPU Scheduling Algorithms. <b>(Cognitive knowledge: Apply)</b>
CO4	Illustrate the performance of First In First Out, Least Recently Used and Least Frequently Used Page Replacement Algorithms. <b>(Cognitive knowledge: Apply)</b>
CO5	Implement modules for Deadlock Detection and Deadlock Avoidance in Operating Systems. <b>(Cognitive knowledge: Apply)</b>
CO6	Implement modules for Storage Management and Disk Scheduling in Operating Systems. <b>(Cognitive knowledge: Apply)</b>

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### Mapping of course outcomes with program outcomes

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	✓	✓	✓					✓		✓		✓
CO2	✓	✓	✓					✓		✓		✓
CO3	✓	✓	✓	✓				✓		✓		✓
CO4	✓	✓	✓	✓				✓		✓		✓
CO5	✓	✓	✓	✓				✓		✓		✓
CO6	✓	✓	✓	✓				✓		✓		✓

Abstract POs defined by National Board of Accreditation			
PO#	Broad PO	PO#	Broad PO
PO1	Engineering Knowledge	PO7	Environment and Sustainability
PO2	Problem Analysis	PO8	Ethics
PO3	Design/Development of solutions	PO9	Individual and team work
PO4	Conduct investigations of complex problems	PO10	Communication
PO5	Modern tool usage	PO11	Project Management and Finance
PO6	The Engineer and Society	PO12	Life long learning

### Assessment Pattern:

Bloom's Category	Continuous Assessment Test (Internal Exam) Marks in percentage	End Semester Examination Marks in percentage
Remember	20	20
Understand	20	20
Apply	60	60
Analyse		
Evaluate		
Create		

  
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### Mark Distribution

Total Marks	CIE Marks	ESE Marks	ESE Duration
150	75	75	3 hours

### Continuous Internal Evaluation Pattern:

Attendance : 15 marks

Continuous Evaluation in Lab : 30 marks

Continuous Assessment Test : 15 marks

Viva Voce : 15 marks

**Internal Examination Pattern:** The marks will be distributed as Algorithm 30 marks, Program 20 marks, Output 20 marks and Viva 30 marks. Total 100 marks which will be converted out of 15 while calculating Internal Evaluation marks.

**End Semester Examination Pattern:** The percentage of marks will be distributed as Algorithm 30 marks, Program 20 marks, Output 20 marks and Viva 30 marks. Total 75 marks.

**Operating System to Use in Lab : Linux**

**Compiler/Software to Use in Lab : gcc**

**Programming Language to Use in Lab : Ansi C**

### Fair Lab Record:

All Students attending the Operating System Lab should have a Fair Record. The fair record should be produced in the University Lab Examination. Every experiment conducted in the lab should be noted in the fair record. For every experiment in the fair record, the right hand page should contain Experiment Heading, Experiment Number, Date of experiment, Aim of the Experiment and the operations performed on them, Details of experiment including algorithm and result of Experiment. The left hand page should contain a print out of the code used for experiment and sample output obtained for a set of input.

  
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**SYLLABUS**  
**OPERATING SYSTEMS LAB**

\* mandatory

1. Basic Linux commands
2. Shell programming
  - Command syntax
  - Write simple functions with basic tests, loops, patterns
3. System calls of Linux operating system:\*
  - fork, exec, getpid, exit, wait, close, stat, opendir, readdir
4. Write programs using the I/O system calls of Linux operating system (open, read, write)
5. Implement programs for Inter Process Communication using Shared Memory \*
6. Implement Semaphores\*
7. Implementation of CPU scheduling algorithms. a) Round Robin b) SJF c) FCFS d) Priority \*
8. Implementation of the Memory Allocation Methods for fixed partition\*
  - a) First Fit b) Worst Fit c) Best Fit
9. Implement l page replacement algorithms a) FIFO b) LRU c) LFU\*
10. Implement the banker's algorithm for deadlock avoidance. \*
11. Implementation of Deadlock detection algorithm
12. Simulate file allocation strategies.
  - b) Sequential b) Indexed c) Linked
13. Simulate disk scheduling algorithms. \*
  - c) FCFS b)SCAN c) C-SCAN

**OPERATING SYSTEMS LAB - PRACTICE QUESTIONS**

1. Write a program to create a process in linux.
2. Write programs using the following system calls of Linux operating system:
  - fork, exec, getpid, exit, wait, close, stat, opendir, readdir
3. Write programs using the I/O system calls of Linux operating system (open, read, write)

  
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4. Given the list of processes, their CPU burst times and arrival times, display/print the Gantt chart for FCFS and SJF. For each of the scheduling policies, compute and print the average waiting time and average turnaround time
5. Write a C program to simulate following non-preemptive CPU scheduling algorithms to find turnaround time and waiting time.  
a)FCFS b) SJF c) Round Robin (pre-emptive) d) Priority
6. Write a C program to simulate following contiguous memory allocation techniques  
a) Worst-fit b) Best-fit c) First-fit
7. Write a C program to simulate paging technique of memory management.
8. Write a C program to simulate Bankers algorithm for the purpose of deadlock avoidance.
9. Write a C program to simulate disk scheduling algorithms a) FCFS b) SCAN c) C-SCAN
10. Write a C program to simulate page replacement algorithms a) FIFO b) LRU c) LFU
11. Write a C program to simulate producer-consumer problem using semaphores.
12. Write a program for file manipulation for display a file and directory in memory.
13. Write a program to simulate algorithm for deadlock prevention.
14. Write a C program to simulate following file allocation strategies.  
a)Sequential b) Indexed c) Linked



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MEL201	COMPUTER AIDED MACHINE DRAWING	CATEGORY	L	T	P	Credits	Year of Introduction
		PCC	0	0	3	2	2019
<p><b>Preamble:</b> To introduce students to the basics and standards of engineering drawing related to machines and components.</p> <p>To make students familiarize with different types of riveted and welded joints, surface roughness symbols; limits, fits and tolerances.</p> <p>To convey the principles and requirements of machine and production drawings.</p> <p>To introduce the preparation of drawings of assembled and disassembled view of important valves and machine components used in mechanical engineering applications.</p> <p>To introduce standard CAD packages for drafting and modeling of engineering components.</p>							
<b>Prerequisite:</b> EST 110 - Engineering Graphics							
<b>Course Outcomes -</b> At the end of the course students will be able to							
CO1	Apply the knowledge of engineering drawings and standards to prepare standard dimensioned drawings of machine parts and other engineering components.						
CO2	Prepare standard assembly drawings of machine components and valves using part drawings and bill of materials.						
CO3	Apply limits and tolerances to components and choose appropriate fits for given assemblies						
CO 4	Interpret the symbols of welded, machining and surface roughness on the component drawings.						
CO 5	Prepare part and assembly drawings and Bill of Materials of machine components and valves using CAD software.						

**Mapping of course outcomes with program outcomes (Minimum requirements)**

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
CO1	3									3		
CO2	3		2							3		
CO3	3	2										
CO4	3											
CO5	3				3					3		1

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**Assessment Pattern**

Bloom's taxonomy	Continuous Assessment Tests	
	Test 1 <u>PART A</u> <u>Sketching and Manual</u> <u>Drawing</u>	Test 2 <u>PART B</u> <u>CAD Drawing</u>
Remember	25	20
Understand	15	15
Apply	30	20
Analyse	10	10
Evaluate	10	15
Create	10	20

**Mark Distribution**

Total Marks	CIE Marks	ESE marks	ESE duration
150	75	75	2.5 hours

**Continuous Internal Evaluation (CIE) Pattern:**

Attendance	15 marks
Regular class work/Drawing/Workshop Record/Lab Record and Class Performance	30 marks
Continuous Assessment Test (minimum two tests)	30 marks

**End semester examination pattern**

End semester examination shall be conducted on Sketching and CAD drawing on based complete syllabus

The following general guidelines should be maintained for the award of marks

- Part A Sketching – 15 marks
- Part B CAD drawing – 50marks
- Viva Voce – 10 marks.

**Conduct of University Practical Examinations**

The Principals of the concerned Engineering Colleges with the help of the Chairmen/Chairperson will conduct the practical examination with the approval from the University and bonafide work / laboratory record, hall ticket, identity card issued by college are mandatory for appearing practical University examinations. No practical examination should be conducted without the presence of an external examiner appointed by the University.



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## END SEMSTER EXAMINATION

## MODEL QUESTION PAPER

## MEL 201: COMPUTER AIDED MACHINE DRAWING

Duration : 2.5 hours

Marks : 75

Note :

1. All dimensions in mm
2. Assume missing dimensions appropriately
3. A4 size answer booklet shall be supplied
4. Viva Voce shall be conducted for 10 marks

**PART A (SKETCHING)**  
(Answer any TWO questions ).

15 marks

1. Sketch two views of a single riveted single strap butt joint. Take dimensions of the plate as 10mm. Mark the proportions in the drawing.
2. Show by means of neat sketches, any three methods employed for preventing nuts from getting loose on account of vibrations
3. Compute the limit dimensions of the shaft and the hole for a clearance fit based on shaft basis system if:

Basic size=  $\phi 30$  mm  
 Minimum clearance = 0.007 mm  
 Tolerance on hole = 0.021 mm  
 Tolerance on shaft= 0.021 mm

Check the calculated dimensions. Represent the limit dimensions schematically.

**PART B (CAD DRAWING)**

50 marks

4. Draw any two assembled views of the Rams Bottom Safety Valve as per the details given in the figure using any suitable CAD software. Also prepare bill of materials and tolerance data sheet.

Item	Description	Qty	Material	Item	Description	Qty	Material
1	Body	1	C.I.	8	Split Pin	3	M.S.
2	Valve Seat	2	G.M.	9	Pin for Link	2	M.S.
3	Spring	1	Steel	10	Pin for Pivot	1	M.S.
4	Valve	2	G.M.	11	Shackle	1	M.S.
5	Lever	1	M.S.	12	Washer	1	M.S.
6	Pivot	1	M.S.	13	Nut	1	M.S.
7	Link	2	M.S.	14	Lock Nut	1	M.S.

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## SYLLABUS

Introduction to machine drawing, drawing standards, fits, tolerances, surface roughness, assembly and part drawings of simple assemblies and subassemblies of machine parts viz., couplings, clutches, bearings, I.C. engine components, valves, machine tools, etc; introduction to CAD etc.

**Text Books:**

1. N. D. Bhatt and V.M. Panchal, Machine Drawing, Charotar Publishing House.
2. P I Varghese and K C John, Machine Drawing, VIP Publishers.

**Reference Books**

1. Ajeet Singh, Machine Drawing Includes AutoCAD, Tata McGraw-hill.
2. P S Gill, Machine Drawing, Kataria & Sons.

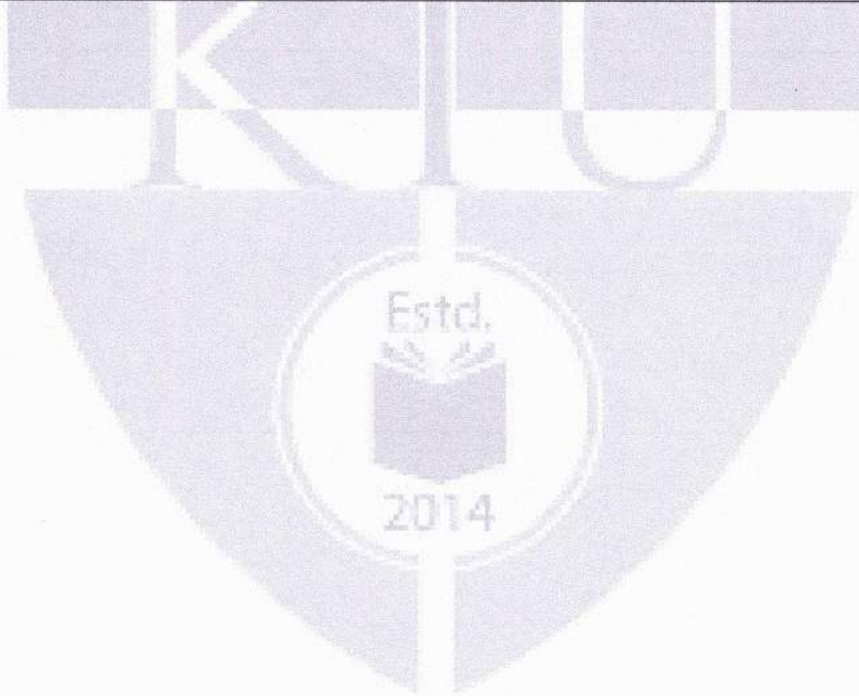
**Course content and drawing schedules.**

No:	List of Exercises	Course outcomes	No. of hours
	<b>PART –A (Manual drawing)</b> <i>(Minimum 6 drawings compulsory)</i>		
1	<b>Temporary Joint:</b> Principles of drawing, free hand sketching, Importance of machine Drawing. BIScode of practice for Engineering Drawing, lines, types of lines, dimensioning, scales of drawing, sectional views, <b>Riveted joints.</b>	CO 1	3
2	<b>Fasteners:</b> Sketching of conventional representation of welded joints, Bolts and Nuts <b>or</b> Keys and Foundation Bolts.	CO 1	3
3	<b>Fits and Tolerances:</b> Limits, Fits – Tolerances of individual dimensions – Specification of Fits – basic principles of geometric & dimensional tolerances. <b>Surface Roughness:</b> Preparation of production drawings and reading of part and assembly drawings, surface roughness, indication of surface roughness, etc.	CO 2	3
4	Detailed drawing of Cotter joints, Knuckle joint and Pipe joints	CO 2	3
5	<b>Assembly drawings(2D):</b> Stuffing box and Screw jack	CO 1 CO3 CO4	3

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	<b>PART –B (CAD drawing)</b> <i>(Minimum 6 drawings compulsory)</i>		
6	Introduction to drafting software like Auto CAD, basic commands, keyboard shortcuts. Coordinate and unit setting, Drawing, Editing, Measuring, Dimensioning, Plotting Commands, Layering Concepts, Matching, Detailing, Detailed drawings.	CO 1 CO 2 CO 3 CO5	3
7	Drawing of Shaft couplings and Oldham's coupling	CO 1 CO 2 CO 3 CO5	3
8	<b>Assembly drawings(2D)with Bill of materials:</b> Lathe Tailstock and Universal joint	CO 1 CO3 CO5	3
9	<b>Assembly drawings(2D)with Bill of materials:</b> Connecting rod and Plummer block	CO 1 CO3 CO5	3
10	<b>Assembly drawings(2D)with Bill of materials:</b> Rams Bottom Safety Valve OR steam stop valve	CO 1 CO3 CO5	3



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CODE	COURSE NAME	CATEGORY	L	T	P	CREDIT
MEL203	MATERIALS TESTING LAB	PCC	0	0	3	2

**Preamble:**

The objective of this course is to give a broad understanding of common materials related to mechanical engineering with an emphasis on the fundamentals of structure-property-application and its relationships. A group of 6/7 students can conduct experiment effectively. A total of six experiments for the duration of 2 hours each is proposed for this course.

**Prerequisite:** A course on Engineering Mechanics is required

**Course Outcomes:**

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

CO 1	To understand the basic concepts of analysis of circular shafts subjected to torsion.
CO 2	To understand the behaviour of engineering component subjected to cyclic loading and failure concepts
CO 3	Evaluate the strength of ductile and brittle materials subjected to compressive, Tensile shear and bending forces
CO 4	Evaluate the microstructural morphology of ductile or brittle materials and its fracture modes (ductile /brittle fracture) during tension test
CO 5	To specify suitable material for applications in the field of design and manufacturing.

**Mapping of course outcomes with program outcomes**

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12
CO 1	3				3							
CO 2	3	3	1		3				3	2	2	1
CO 3	3	3	3	1	3				3	2	3	2
CO 4	3	3	3	3	3	2	2	1	3	2	3	2
CO 5	3	3	3	1	3	2	2	1	3	2	3	2

**Assessment Pattern****Mark distribution**

Total Marks	CIE	ESE	ESE Duration
150	75	75	2.5 hours

  
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**Continuous Internal Evaluation Pattern:**

Attendance	:	15 marks
Continuous Assessment	:	30 marks
Internal Test (Immediately before the second series test)	:	30 marks

**End Semester Examination Pattern:**

The following guidelines should be followed regarding award of marks

(a) Preliminary work	:	15 Marks
(b) Implementing the work/Conducting the experiment	:	10 Marks
(c) Performance, result and inference (usage of equipments and troubleshooting)	:	25 Marks
(d) Viva voce	:	20 marks
(e) Record	:	5 Marks

**General instructions:**

Practical examination to be conducted immediately after the second series test covering entire syllabus given below. Evaluation is a serious process that is to be conducted under the equal responsibility of both the internal and external examiners. The number of candidates evaluated per day should not exceed 20. Students shall be allowed for the University examination only on submitting the duly certified record. The external examiner shall endorse the record.

A minimum of 10 experiments are to be performed.

**SYLLABUS**  
Estd.  
**LIST OF EXPERIMENTS**

1. To conduct tension test on ductile material (mild steel/ tor-steel/ high strength steel) using Universal tension testing machine and Extensometer.
2. To conduct compression test on ductile material (mild steel/ tor-steel/ high strength steel) using Universal tension testing machine and Extensometer.
3. To conduct tension test on Brittle material (cast iron) using Universal tension testing machine and Extensometer.
4. To conduct shear test on mild steel rod.
5. To conduct microstructure features of mild steel/copper/ brass/aluminium using optical microscope, double disc polishing machine, emery papers and etchant.
6. To conduct fractography study of ductile or brittle material using optical microscope.

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7. To conduct Hardness test of a given material. (Brinell, Vickers and Rockwell)
8. To determine torsional rigidity of mild steel/copper/brass rod.
9. To determine flexural rigidity of mild steel/ copper/brass material using universal testing machine.
10. To determine fracture toughness of the given material using Universal tension testing machine.
11. To study the procedure for plotting S-N curve using Fatigue testing machine.
12. To conduct a Toughness test of the given material using Izod and Charpy Machine.
13. To determine spring stiffness of close coiled/open coiled/series/parallel arrangements.
14. To conduct bending test on wooden beam.
15. To conduct stress measurements using Photo elastic methods.
16. To conduct strain measurements using strain gauges.
17. To determine moment of inertia of rotating bodies.
18. To conduct an experiment to Verify Clerk Maxwell's law of reciprocal deflection and determine young's Modulus of steel.
19. To determine the surface roughness of a polished specimen using surface profilometer.

#### Reference Books

1. G E Dieter. Mechanical Metallurgy, McGraw Hill,2013
2. Dally J W, Railey W P, Experimental Stress analysis , McGarw Hill,1991
3. Baldev Raj, Jayakumar T, Thavasimuthu M., Practical Non destructive testing, Narosa Book Distributors,2015



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