Curriculum Structure
(2012 – 2016)

Semester–I

Theory Courses

Course Code	Title	Scheme of Examination				Hrs./Week		
		Duration (hrs)	IA	UE	Total Marks	L	T	P
ITE-121	Communication Skills	3	40	60	100	3	1	0
ITE-122	Mathematics-I	3	40	60	100	3	1	0
ITE-123	Computer Fundamentals	3	40	60	100	3	1	0
ITE-124	Basic Electronics	3	40	60	100	3	1	0
ITE-125	Engineering Mechanics	3	40	60	100	3	1	0
ITE-126	Engineering Drawing	3	40	60	100	3	1	0
Total			**240**	**360**	**600**			

Laboratory Course

ITE-131	Computer Fundamentals	2	25	25	50	0	0	2
ITE-132	Basic Electronics	2	25	25	50	0	0	2
ITE-133	Engineering Mechanics	2	25	25	50	0	0	2
ITE-134	Workshop Practice	2	50	-	50	0	0	2
Total			**125**	**75**	**200**			
Total (Theory + Lab)			**365**	**435**	**800**			

Course Title: Communication Skills-I **Max Marks: 100**
Course Code: ITE-121 **University Examination: 60**
Duration of Exam: 3 hours **Internal Assessment: 40**

Objective: In this world of globalization English language is the first and foremost criteria to acquire job in reputed companies .This course is designed to hone the soft skills of students to make them proficient in English Language(writing & speaking).

Unit–I

Communication: Scope & importance of communication, types of communication, barriers of communication and techniques to improve communication.

Unit-II

Phonetics: Speech mechanism, organs of speech**,** phonetic transcription, effective speaking.

Unit-III

Applied Grammar: Articles, prepositions, modal auxiliaries, verbs, antonyms, and synonyms.

Unit-IV

Précis writing: Definition, qualities of a good précis. Ten steps to précis writing. Passages for précis writing.

Unit-V

Business Correspondence: Memorandum, Notices, Agendas, Meetings and Minutes.

Text Books:

1. **Lesikar R.V**. and **Pettit Jr.** Business Communication Theory and Applications, Irwin, 2002 Ed.
2. **Bansal R. K. & Harrison J. B.,** Spoken English, Orient Longman Hyderabad

Reference Books:

1. **Gimson A. C.,** an Introduction to the Pronunciation of English, ELBS (YP).
2. **Pal Rajendra** and **Korlhalli, J. S.** Essentials of Business Communication , Sultan C hand &Sons 2007
3. **Rayudu, C. S**. Media and Communication Management, Himalaya Publishing House.

Note for paper setter: The question paper comprises 10 questions. Two questions shall be set from each unit. The students have to attempt five questions, selecting one from each unit.

Semester I

Course Title: Mathematics-I **Max Marks: 100**
Course Code: ITE-122 **University Examination: 60**
Duration of Exam: 3 hours **Internal Assessment: 40**

Objective: The course is designed to provide basic knowledge of Complex Trigonometry, Calculus and Algebra to the engineering students.

Unit-I

Complex Trigonometry : Review of algebra of complex numbers, De'Moiver's Theorem and its application, Exponential and Circular functions of a complex variable, Hyperbolic and Inverse hyperbolic functions, Logarithmic function of a complex variable, Summation of series- C+iS method.

Unit-II

Differential Calculus: Successive differentiation and Leibnitz's theorem, Functions of more than one variable and partial differentiation, Geometrical and physical significance of partial derivatives, Homogenous functions and Euler's theorem, Taylor's and Maclaurin's series of function of one and two variables, Expansion of functions, Maxima and Minima of two variables and Lagrange's multipliers.

Unit-III

Integral Calculus: Definite Integral and their properties, Differentiation under integral sign, Gamma, Beta and Error functions. Transformation of Cartesian co-ordinates into polar, spherical and cylindrical co-ordinates, Multiple integrals, Change of order of integration and applications to simple problems.

Unit-IV

Ordinary Differential Equations: Differential equations of first order and first degree and their solution of the types: equations where variables are separable, Homogenous equations, Linear equations, Exact equations and equations reducible to the above forms, Higher order linear differential equation with constant co-efficient, Solutions of equations reducible to linear equations with constant co-efficient, Cauchy's homogenous linear equation and Legendre's linear equation, Applications of ODEs to simple problems of physical sciences and Engineering.

Unit-V

Sequence and Series: Convergence and Divergence of sequences and series, Comparison test, D'Alembert's ratio test and Cauchy's root test, Alternating series, Leibnitz's rule, Conditionally and absolute convergence.

Text Books:

1. **Grewal B.S.,** Higher Engineering Mathematics.
2. **Narayan Santi**, Differential Calculus.

Reference Books:

3. **Narayan Santi**, Integral Calculus.
4. **Ross S. L**., Differential Equations.
5. **Piaggio H.T. H**., Differential Equations and its Applications.

Note for Paper Setter: -The Question paper shall comprise of 10 questions. Two questions will be set from each unit .The student has to attempt five questions at least one from each unit. Use of calculator is allowed in the examination

Semester I

Course Title: Computer Fundamentals **Max Marks: 100**
Course Code: ITE-123 **University Examination:60**
Duration of Exam: 3 hours **Internal Assessment:40**

Objective: The course is designed to provide basic knowledge of Computing concepts, operating system concepts and to train students in using common computer software applications.

Unit-I

Introduction: History of Computers, Generations of Computers, Classification of Computers, Application of Computers, Computer Hardware, Input, and Output devices. Memory Hierarchy, RAM, ROM, PROM and types, Secondary memory, working of a Hard Disk and its types.

Unit-II

Software and Languages: Computer Software, System and Application Software, BIOS, POST, Booting Process, Virus, WORM, and Trojans.
Programming Languages, Generations of Languages, Compilers, Assemblers, Machine Language and Assembly Language. Introduction to algorithm and Flow chart: Representation of an algorithm, flowchart symbols and levels of flow chart, rules, advantage and limitations of flowchart and pseudo code.

Unit-III

Data Representation, Number System: Binary, Decimal, Octal and Hexadecimal number systems, Inter conversion of number system, 1's compliment, 2's compliment, 9's compliment, n's compliment. Logic Gates, Boolean algebra, alphanumeric representation, fixed point representation.

Unit-IV

Booting process details of Dos and Windows: - DOS system files, Internal and External Commands, Difference between External and Internal Commands. Internal Commands: MD, CD, RD, COPY CON, TYPE, DATE & TIME, VOLUME VERSION, REN, PROMPT, CLS, DIR/P/W, COPY , DEL External commands: FORMAT, DISKCOPY, DISKCOMP, XCOPY, CHKDISK, SCANDISK, HELP, DEBUG, PRINT. Creation of Batch Files.

Unit-V

Introduction to Computer networks: Applications, types of computer networks, Peer-to-Peer Networks, Client Server Networks, Centralized and Distributed Systems, Internet, Intranet, Extranet, email, ISPs.

Text Books:

1. **Peter Norton**, Introduction to Computers, TMH.
2. **Sanjay Toledo Mata**, A First Course in Computers, TMH.

Reference Books:

1. **Rajaraman,** Introduction to Digital Computer Design, Prentice Hall India.
2. **Bartee, Thomas,** Digital Computer Fundamentals, TMH.

Note for Paper Setter: The Question paper shall comprise of 10 questions. Two questions will be set from each unit .The student has to attempt five questions at least one from each unit.

Semester I

Course Title: Basic Electronics **Max Marks: 100**
Course Code: ITE-124 **University Exam: 60**
Duration of Exam: 3 hours **Internal Assessment: 40**

Objective: This course aims to provide students with solid background of semiconductors and some basic solid state electronic devices used in circuits.

Unit-I

Semiconductors: Classification, semiconductor bonds, Energy band description, Semiconductor types, Energy band diagram for Semi conductors, Drift and Diffusion Current, Mobility of Charged particles, Current density and Conductivity, Conductivity of Semi conductors, Hall Effect.

Unit-II

Introduction to p-n Junction: Current components in p-n junction, Diodes and Characteristics, temperature dependence, equivalent circuits. Rectifiers, half wave, full wave rectifiers, bridged rectifiers (efficiency, ripple factor). Clipping and clamping circuits. Basic operations of Zener, Avalanche and Photo Diodes.

Unit-III

Transistors: Types of transistors, operation & characteristics, CE, CB and CC configurations, Input output characteristics and graphical analysis of basic amplifier circuits, biasing and bias stability, use of transistor as a switch.

Unit-IV

Field Effect Transistors: Operation and characteristics. JFET, MOSFET, types of MOSFET, operation and characteristics of JFET and MOSFET, biasing of JFET and MOSFET. Introduction to feedback, Types of feedbacks, Sinusoidal Oscillators, Hartley, Collpitts and Phase Shift oscillators (transistor version only and no derivation).

Unit-V

Biasing Techniques and biasing stability (BJT/FET):- Need for biasing, operating point,load line analysis,fixed bias configuration, emitter bias configuration, voltage divide bias configuration analysis of these biasing techniques , and bias stability.

Text Books:

1. **Millman & Halkias**, Electronic Devices & Circuits, TMH
2. **Boylestad** and **Nashelky,** Electronic Devices & Circuits, PHI.

Reference Books:

1. **Floyd T. L.,** Electronic Devices, Pearson Education.
2. **Theodore Bogart Jr**., Electronic Devices & Circuits, Pearson Education.
3. **Mehta V. K.**, Electronic Devices, S. Chand and Sons, New Delhi

Note for Paper Setter: The Question paper shall comprise of 10 questions. Two questions will be set from each unit .The student has to attempt five questions at least one from each unit

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Semester I

Course Title: Engineering Mechanics **Max Marks: 100**
Course Code: ITE-125 **University Examination:60**
Duration of Exam: 3 hours **Internal Assessment:40**

Objective: The course introduces students to the analysis of dynamic and static systems encountered in engineering design practice.

Unit-I

Two Dimensional force System: Basic Concepts, principal of transmissibility, resultant of a force System, free body Diagrams, Equilibrium and equation of equilibrium Applications. Moment of a force about a point, varrigon theorem friction, law of friction, equilibrium of body lying on horizontal and inclined plane. Ladder friction applications.

Unit-II

Members forces in trusses: planer truss structure, trust joint identification, strategy for planer truss analysis. Statical determinacy and stability of planer trusses. Numerical truss analysis (Method of joints and method of selection)

Unit-III

Kinematics of particles: Velocity and acceleration in rectilinear motion along a plane and curved path. Tangential and normal components of velocity and acceleration motion curves. Kinematics of rigid bodies rotation, absolute motion, relative motion.

Unit-IV

Introduction to centroid and centre of gravity: Centroid and moment of inertia; centroid of plane area and solid bodies. Moment of inertia of plane area. Theorem of parallel axis, Theorem of perpendicular axis, radius of gyration, composite ideas.

Unit-V

Analysis of stress and strains: Forces and stress normal stress and strain under axial loading, ultimate and allowable stresses, mechanical properties, Hooke's law, modulus of elasticity. Factor of safety, deformation of members under axial loading, thermal stresses, Poisson's ratio multi axial loading, bulk modulus, shearing Strain, Relation among shear modulus, Young's Modulus and Bulk Modulus.

Text Books:

1. **S. Ramamrutham,** Strength of Materials, Dhanpal Rai & Co,.

Reference Books:

1. **R. K. Bansal,** Engineering Mechanics and Strength of Materials, Laxmi Publication.

Note for Paper Setter: The Question paper shall comprise of 10 questions. Two questions will be set from each unit .The student has to attempt five questions at least one from each unit.

Semester I

Course Title: Engineering Drawing **Max Marks: 100**
Course Code: ITE-126 **University Examination: 60**
Duration of Exam: 3 hours **Internal Assessment: 40**

Objective: The course is designed to develop the ability to visualize and communicate three-dimensional shapes and train the students to create drawings following the engineering graphics conventions.

Unit-I

Introduction to Engineering Graphics: Engineering drawing as language of Engineers. Drawing instruments and their uses. **Projections**: The planes of projections, first and third angle projections, projection of points lying in any quadrant. Scale: needs and importance, to find representative factor of a scale, drawing of simple and diagonal scales.

Unit-II

Projection of straight line and their traces: projection of planes. Planes parallel to reference plane; plane perpendicular to both reference planes; planes perpendicular to one and inclined to other reference plane. Projection of solids with their axes perpendicular or inclined to one reference plane but parallel to other.

Unit-III

Section of Solids & Development of surfaces: Definition of sectioning and its purpose, Procedure of sectioning, Illustration through examples, types of sectional planes. Purpose of development, Parallel line, radial line and triangulation method, Development of prism, cylinder, cone and pyramid surface for both right angled and oblique solids.

Unit-IV

Orthographic Projections: Theory of orthographic projections (Elaborate theoretical instructions) Drawing 3 views of given objects (Non symmetrical objects and blocks may be selected for this exercise) Exercises on both first angle are third angle.

Unit-V

Isometric Projection: Classification of pictorial views, Basic Principle of Isometric projection, Difference between isometric projection and drawing, Isometric projection of solids such as cube, prism, pyramid and cylinder.

Text Books:

1. **Bhat, N. D. and Panchal, V. M.**, Engineering Drawing, Charotar Publishers, Anand.

2. **Narayana, K. L. and Kannaiah, P.**, Engineering Graphics, Tata McGraw Hill, New Delhi.

Reference Books:

3. **Gill P. S.,** Engineering Graphics and Drafting, Katria and Sons, Delhi.
4. **Luzzadde Warren J**., Fundamentals of Engineering Drawing, PHI.

Note for paper setter: The Question paper shall comprise of 10 questions. Two questions will be set from each unit. The student has to attempt five questions at least one from each unit. Question will be set accordingly so that student can be able to answer 5 questions within 3 hours.

Semester I

Course Title: Computer Fundamentals **Max Marks: 50**
Course Code: ITE-131 **University Examination: 25**
Duration of Exam: 3 hours **Internal Assessment: 25**

Note: A student is required to undergo training in the following areas:

1. Introduction to Windows.
2. MS-Office software.
3. Create, save, retrieve text file.
4. Spreadsheet program- Create, manage, and manipulate numeric data
5. Presentation software – Create presentations
6. DOS: Internal, external commands.
7. Introduction to the components of a PC.
8. Assembling of a PC.
9. Basic trouble shooting of a PC.
10. Software Installation (both system and application software's).

Note: These are only the suggested list of experiments. Instructor may add or change some practical relevant to the course contents

Semester I

Course Title: Basic Electronics **Max Marks:50**
Course Code: ITE-132 **University Exam:25**
Duration of Exam: 3 hours **Internal Assessment:25**

List of Experiments:

1. To plot the Resonance curve for a series & parallel resonance.
2. To determine and plot operating characteristics of a PN junction diode
3. To study the input / output waveforms of Half wave and bridge wave rectifiers
4. To suppress the ripple in rectifiers using RC filters.
5. To study the clipper and clamper circuits.
6. To study the Zener characteristics and its application as voltage regulator
7. To plot characteristics of transistor in CE/CB configuration
8. To plot characteristics of a BJT.
9. To plot MOSFET characteristics.
10. To study frequency response of RC Coupled Oscillators.

Note: These are only the suggested list of experiments. Instructor may add or change some experiments relevant to the course contents.

Semester I

Course Title: Engineering Mechanics **Max Marks: 50**
Course Code: ITE-133 **University Examination: 25**
Duration of Exam: 3 hours **Internal Assessment: 25**

List of Experiments:

1. To conduct tensile test and determine the ultimate tensile strength, percentage elongation and reduction.
2. To conduct the compression test and determine the ultimate compressive strength for a specimen.
3. To determine centroid of Lamina.
4. To determine the hardness of a given specimen using vicker/brinel/Rockwell hardness testing machine.
5. To very Lami's theorem.
6. To verify polygon law of forces.
7. Friction experiment on inclined plane.
8. Experiment on screw Jack.
9. To verify reactions at the supports of a simply supported beam.
10. To determine moment of inertia of various shapes.

Note: These are only the suggested list of experiments. Instructor may add or change some experiments relevant to the course contents.

Semester I

Course Title: Workshop Practice **Max Marks:50**
Course Code: ITE-134 **University Examination:00**
Duration of Exam: 3 hours **Internal Assessment:50**

Carpentry Shop:

- Study of tools & operations and carpentry joints
- Simple exercise using jack plane
- To prepare half-lap corner joint, mortise & tennon joints
- Simple exercise on woodworking lathe.

Fitting Shop:

- Study of tools & operations
- Simple exercises involving fitting work
- Make perfect male-female joint
- Simple exercises involving drilling/tapping/dyeing

Smithy Shop:

- Study of tools & operations
- Simple exercises base on black smithy operations such as upsetting, drawing down, punching, bending, fullering & swaging

Welding Shop:

- Study of tools & operations of Gas welding & Arc welding
- Simple butt and Lap welded joints
- Oxy-acetylene flame cutting

Sheet-Metal Shop:

- Study of tools & operations
- Making Funnel complete with 'soldering'
- Fabrication of tool-box, tray, electric panel box etc

Machine Shop:

- Study of machine tools and operations
- Plane turning
- Step turning
- Taper turning
- Threading
- Single point cutting tool grinding

Foundry Shop:

- Study of tools & operations
- Pattern making
- Mould making with the use of a core.
- Casting

Note: This is only the suggested list of experiments. Instructor may add or change some experiments relevant to the course contents

Reference Books:

1. **Kapoor V**. Work Shop Practice.
2. **Raghuwanshi B. S.,** Workshop technology.
3. **Bawa H. S.,** Workshop practice.
4. **Gupta, B. R.,** Production Technology.