KUMARAGURU COLLEGE OF TECHNOLOGY, COIMBATORE – 641 049

(An Autonomous Institution Affiliated to Anna University, Chennai)

REGULATIONS – 2015

(CBCS)

CURRICULUM AND SYLLABI FOR I & II SEMESTERS

From Academic year 2015-2016

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B. Tech - INFORMATION TECHNOLOGY

SEMESTER – I

	Course Code	Course Title	Category	Contact Hours	Hrs/Week & Credits			
					L	T	P	C
Theory								
1.	U15EN*T*101	Technical English	HS	3	3	0	0	3
2.	U15MA*T*101	Engineering Mathematics – I	BS	5	3	2	0	4
3.	U15PH*T*101	Engineering Physics	BS	3	3	0	0	3
4.	U15CH*T*101	Engineering Chemistry	BS	3	3	0	0	3
5.	U15ME*T*101	Engineering Graphics	ES	6	2	4	0	4
6.	U15IT*T*101	Foundations of Information Technology	PC	3	3	0	0	3
Practical								
7.	U15PH*P*101	Physics Laboratory	BS	2	0	0	2	1
8.	U15ME*P*101	Engineering Practices Laboratory	ES	4	0	0	4	2
9	U15IT*P*101	Computer Hardware and Peripherals Laboratory	PC	4	0	0	4	2
10.	U15GH*P*101	Personal Values	HS	2	0	0	2	1
TOTAL				35				26

SEMESTER – II

	Course Code	Course Title	Category	Contact Hours	Hrs/Week & Credits			
					L	T	P	C
Theory								
1.	U15EN*T*201	Business Communication and Presentation Skills	HS	4	2	0	2	3
2.	U15MA*T*201	Engineering Mathematics – II	BS	5	3	2	0	4
3.	U15PH*T*203	Materials Science	BS	3	3	0	0	3
4.	U15EE*T*212	Electrical and Electronic Circuits	ES	4	3	0	0	3
5.	U15CH*T*203	Chemistry for Circuit Engineering	BS	3	3	0	0	3
6.	U15CST201	Structured Programming using 'C'	ES	4	2	2	0	3
Practical								
7.	U15CH*P*201	Chemistry Laboratory	BS	2	0	0	2	1
8.	U15EE*P*212	Electrical and Electronic Circuits Laboratory	ES	4	0	0	4	2
9	U15CS*P*201	Structured Programming Laboratory using 'C'	ES	4	0	0	4	2
10.	U15GH*P*201	Family & Professional Values	HS	2	0	0	2	1
TOTAL				35				26

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U15EN*T*101 - TECHNICAL ENGLISH (Common to all branches of Engineering and Technology)	L	T	P	C
	3	0	0	3

COURSE OBJECTIVES

- To assist learners to enhance their technical jargon and to impart knowledge on the application of technical English.
- To familiarize learners with different rhetorical functions of technical syntax.
- To inculcate written proficiency in commercial and business context.
- To improve the competency of professional writing with special reference to career related situations
- To provide pragmatic exposure to technical correspondence.

FOUNDATIONS OF TECHNICAL JARGON **9 Hours**

Parts of Speech – Word Formation – Morphemes – Affixing, Synonyms and Antonyms, Homonyms - Homophones and Homographs, One Word Substitutes, Derivational jargon, Inflectional Morphemes, Nominal Compounds, Acronyms and abbreviations, Clipping, Back formation, Portmanteau, Analogies, Spelling, Definitions

TECHNICAL SYNTAX **9 Hours**

Tense, Voice, Kinds of Syntax, Modal Verbs, Gerund and Infinitives, Cause and effect expressions, Purpose and functional expressions, Concord – Subject-Verb Agreement, Conditional syntax, Reported speech

APPLICATIONS OF TECHNICAL SYNTAX **9 Hours**

Editing (Grammar - Articles, Parts of Speech, Modifiers – Dangling, Misplaced, Squinting and Punctuation), Instructions and Recommendations, Discourse markers – Process description, Writing a Paragraph – Descriptive, Narrative, Compare and Contrast, Argumentative, Evaluative, Persuasive, Sequencing of jumbled sentences

DRAFTING TECHNICAL DETAILS **9 Hours**

Note making – Linear and Non-linear; Report writing – Techniques of writing a report, Incident report, Accident report, Feasibility report; Project Proposals; Transcoding Graphics – Encoding and Decoding – Bar chart / Pie chart / Flow chart / Line graph / Tabulated data / Tree diagram or Organizational chart; Letter of Application and Resume; Statement of Purpose

TECHNICAL CORRESPONDENCE **9 Hours**

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Modules of a letter – Official & Demi-Official Letters – Applying for Bank Loans, Bona-fide Certificate / Mark List, Industrial Visit, Inplant Training, Letter to the Editor, Letter for Organizing functions, Notices and Circulars, Agenda, Minutes of Meeting

TOTAL: 45 HOURS

REFERENCES

1. Rizvi Ashraf. M., Effective Technical Communciation, Tata McGraw Hill Publishing Co., Ltd., New Delhi, 2008.
2. Dhanavel.S.P., English and Communication Skills for Students of Science and Engineering, Chennai, Orient Blackswan, 2009.
3. Bhatnagar R.P. & Rahul Bhargava, "English for Competitive Examinations", Macmillian Publishers, India, 1989, ISBN: 9780333925591
4. Devadoss K. & Malathy P., "Career Skills for Engineers", National Book Publishers, Chennai, 2013.
5. Aggarwal R.S., "A Modern Approach to Verbal & Non–Verbal Reasoning", S.Chand Publishers, India, 2012, ISBN : 8121905516

COURSE OUTCOMES

After successful completion of this course, the students should be able to:

CO1: Use technical vocabulary and systematic sentence construction to express technical perceptions.
CO2: Develop proficiency in technical writing skills needed for the industry.
CO3: Handle technical and general correspondence with respect to the corporate sector.
CO4: Comprehend and interpret Engineering applications.
CO5: Apply and analyze technical and general communication.

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U15EN*T*201 – BUSINESS COMMUNICATION AND PRESENTATION SKILLS	L	T	P	C
	2	0	2	3
(Common to all branches of Engineering and Technology)				

COURSE OBJECTIVES

- Develop a milestone for leadership and group participation through communication skills
- Discover an understanding of the process of adept listening skills
- Formulate a significant training ground for the development of student's abilities in public speaking
- Create multiple opportunities for students to practice and share their reading skill development
- Improve critical thinking and analytical skills to facilitate effective writing skills

FUNDAMENTALS OF BUSINESS COMMUNICATION 9 Hours

Introduction to Business Communication - Greetings, Formal and Informal Introduction of Self and Others, Giving encouragement: Phrases for Positive Feedback, Agreeing and disagreeing – Expressions indicating frequency, Reading to Understand – Facts, Inference, Main Idea, Author's Opinion/ tone, Fundamentals of Letter Writing, Short prepared compositions on current affairs.

LISTENING AND COMPREHENDING BUSINESS COMMUNICATION 9 Hours

Listening to monologues, Listening for general content- Listening to dialogues- Listening to a telephonic conversation- Listening for specific information, numbers, time, duration- Listening to conversations between three or more people- Listening to a group discussion and providing factual information, Intensive listening

ORAL BUSINESS COMMUNICATION 9 Hours

Establishing Business relationships and negotiating, Describe an object or event- Describing a working mechanism- Argumentative speech about a Business / Public issue (Debate) - Responding to situations and providing solutions (Case Studies), Seeking Permission, Introduction to Presentation Skills - Presenting information, Giving and Getting Product and Service Information, Perceiving Visual Information, Talking about People and Places

READING AND COMPREHENDING BUSINESS COMMUNICATION 9 Hours

Reading techniques, News Paper Reading, Reading brochures, leaflets, instruction manual- Cloze test- Reading Comprehension, Book review, Article review, Literature Survey (Business Journals), Reading a Technical Report, Critical Reading (Editorial): Creative and Critical thinking

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WRITTEN BUSINESS COMMUNICATION **9 Hours**

Product Review, Writing a proposal for conducting science exhibition, E-mail etiquette and correspondence, Business Itinerary, Business Letters – Calling for a quotation – Placing Order – Letter of Complaint – Letter seeking Clarification – Acknowledging prompt / quality service, Letter Writing – requesting information, explaining a situation, letter of acceptance, declining letter, Encoding and decoding advertisements

TOTAL : 45 HOURS

REFERENCES

1. Cambridge English for Engineering by Mark Ibbotson . Cambridge University Press. 2008.
2. English in Action by Barbara H. Foley, Elizabeth R. Neblett. Adult&Academic ESL.2003.
3. Speaking Effectively- Jeremy Comfort, Pamela Rogerson, Trish Stott and Derek Utley, Published by Cambridge University Press.1994
4. Everyday English: A Course on Communicative English, Dorothy Adams. Cengage learning. 2009.
5. BEC Vantage- Business Benchmark Upper – Intermediate by Guy Brook- Hart. 2006
6. English for the College Boards , Henry I Christ. Amsco. 1987

COURSE OUTCOMES

After successful completion of this course, the students should be able to:

CO1: Gain cognizance of Business Environment leading to effective communication.
CO2: Enhance business communication through practicing effective reading strategy.
CO3: Develop effective written skills and set goals for future growth.
CO4: Practice and perceive the full repertoire of listening strategies by using authentic listening tasks.
CO5: Inculcate Spoken Communication Skills required for presentations and discussions.

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U15MA*T*101/ ENGINEERING MATHEMATICS -I (Common to all branches of Engineering and Technology)	L	T	P	C
	3	2	0	4

COURSE OBJECTIVES

On completion of the course, the students are expected

- To know eigen values and eigen vectors and diagonalization of a matrix.
- To know about the geometrical aspects of curvature, evolute and envelope.
- To solve ordinary differential equations of certain types and its application.
- To understand the concepts of partial differentiation, maxima and minima.

MATRICES **9 Hours**

Rank of a matrix – Linearly dependent and independent vectors – Eigen values and eigenvectors of a real matrix – Properties of eigen values and eigenvectors – Cayley Hamilton theorem (excluding proof) – Orthogonal matrices – Orthogonal transformation of a symmetric matrix to diagonal form – Reduction of quadratic form to canonical form by orthogonal transformation.

GEOMETRICAL APPLICATIONS OF DIFFERENTIAL CALCULUS **9 Hours**

Curvature – Radius, Centre and Circle of curvature in Cartesian, Parametric and Polar form – Evolute – Envelope of family of curves with one and two parameters – Evolute as the envelope of normals – properties of evolute and envelope.

FIRST ORDER ORDINARY DIFFERENTIAL EQUATIONS **9 Hours**

Leibnitz's equation – Bernoulli's equation – Equations of first order and higher degree - Clairauts form – Applications: Orthogonal trajectories and simple Electric circuit problems.

HIGHER ORDER LINEAR DIFFERENTIAL EQUATIONS **9 Hours**

Linear equations of second and higher order with constant coefficients – Euler's and Legendre's linear equations – Method of variation of parameters – First order Simultaneous linear equations with constant coefficients - Application - Electrical circuit. (Differential equations and associated conditions need to be given).

FUNCTIONS OF SEVERAL VARIABLES **9 Hours**

Total derivative – Taylor's series expansion – Maxima and minima of functions of two variables – Constrained maxima and minima: Lagrange's multiplier method with single constraints – Jacobians.

L: 45Hr; T: 15Hr; TOTAL = 60 HOURS

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REFERENCES

1. Grewal B.S., "Higher Engineering Mathematics", Khanna Publishers, New Delhi, 40th Edition.
2. Veerarajan T., Engineering Mathematics (for First Year), Tata McGraw Hill Pub. Co. Ltd., New Delhi, Revised Edition, 2007.
3. Kandasamy P., Thilagavathy K., and Gunavathy K., "Engineering Mathematics",S. Chand & Co., New Delhi, (Reprint) 2008.
4. Kreyzig E., "Advanced Engineering Mathematics", Eighth Edition, John Wiley and sons, 2010.
5. Arunachalam, T., Engineering Mathematics I, Sri Vignesh Publications, Coimbatore. (Revised) 2009.
6. Venkataraman M.K., "Engineering Mathematics", The National Pub. Co., Chennai,2003.
7. Ramana B.V, "Higher Engineering Mathematics", Tata McGraw Hill Publishing Company, New Delhi, (2007).

COURSE OUTCOMES

After successful completion of this course, the students should be able to:

CO1: Know eigen values and eigen vectors and its role in the system of equations.
CO2: Discover the radius, centre and circle of curvature of any curves.
CO3: Solve the ordinary differential equations of certain types and its applications.
CO4: Identify the maximum and minimum values of surfaces

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U15MA*T*201/ ENGINEERING MATHEMATICS - II (Common to all branches of Engineering and Technology)	L	T	P	C
	3	2	0	4

COURSE OBJECTIVES

On completion of the course, the students are expected

- To understand double and triple integrations and enable them to find area and volume using multiple integrals.
- To know the basics of vector calculus comprising gradient, divergence and curl and line, surface and volume integrals.
- To understand analytic functions of complex variables and conformal mappings.
- To know the basics of residues, complex integration and contour integration.
- To understand Laplace transform and use it to represent system dynamic models and evaluate their time responses.

MULTIPLE INTEGRALS **9 Hours**

Double integration – Cartesian and polar coordinates – Change of order of integration –Change of variables between cartesian and polar coordinates - Triple integration in cartesian coordinates – Application : Area as double integral – Volume as triple integral .

VECTOR CALCULUS **9 Hours**

Gradient, divergence and curl – Directional derivative – Irrotational and solenoidal vector fields - Green's theorem in a plane, Gauss divergence theorem and Stoke's theorem (excluding proofs) – Simple applications involving cubes and rectangular parallelopipeds.

ANALYTIC FUNCTION **9 Hours**

Functions of a complex variable – Analytic functions – Necessary conditions, Cauchy- Riemann equations in Cartesian coordinates and sufficient conditions (excluding proofs) – Properties of analytic function – Construction of analytic function by Milne Thomson method – Conformal mapping : $w = z + c$, cz , $1/z$ and bilinear transformation.

COMPLEX INTEGRATION **9 Hours**

Statement and applications of Cauchy's integral theorem and Cauchy's integral formula (excluding proofs) – Taylor's and Laurent's series expansions – Singularities – Residues – Cauchy's residue theorem (excluding proof) – Application of residue theorem to evaluate real integrals - Unit circle and semi-circular contours (excluding poles on real axis).

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LAPLACE TRANSFORM **9 Hours**

Definition - Properties – Superposition - Shift in t - Shift in s - Time Derivatives - Time Integral – Initial and Final Value Theorems – Periodic functions: sine wave, saw-tooth, square and triangular waves - Inverse Laplace Transform – Simple system dynamic models – Transfer Functions – Poles and Zeroes - Response of First-Order Systems - Solution of RC Free, Step and Sinusoidal Responses; Response of Second-Order Systems - Free Response, step Response - Convolution theorem.

L: 45Hr; T: 15Hr; TOTAL = 60 HOURS

REFERENCES

1. Grewal B.S., Higher Engineering Mathematics, Khanna Publishers, Delhi, 42nd Edition, 2012.
2. Philip D. Cha, James J. Rosenberg, Clive L. Dym, Fundamentals of Modelling and Analyzing Engineering Systems, Cambridge University Press, United Kingdom, 2000.
3 Kreyzig E., Advanced Engineering Mathematics, John Wiley & Sons (Asia), Pvt, Ltd., Singapore, 10th Edition, 2010.
4 Veerarajan T., Engineering Mathematics (for First Year), Tata McGraw Hill, Pub. Co. Ltd., New Delhi, Revised Edition, 2007.
5 Venkataraman M.K., Engineering Mathematics, Volume - II, The National Pub. Co., Chennai, 2003.
6 Kandasamy P., Thilagavathy K. and Gunavathy K., Engineering Mathematics, S. Chand & Co., New Delhi, 2008.
7 Arunachalam T. and Sumathi K., Engineering Mathematics II, Sri Vignesh Publications, Coimbatore, Third Edition, 2011.

COURSE OUTCOMES

After successful completion of this course, the students should be able to:

CO1: Evaluate double integral and triple integral to compute area, volume for two dimensional and three dimensional solid structure.
CO2: Know the gradient, divergence and curl, related theorems useful for engineering applications.
CO3: Test the analyticity and to construct the analytic function and transform complex functions from one plane to another plane graphically.
CO4: Evaluate real and complex integrals over suitable closed paths or contours.
CO5: Know the Applications of Laplace transform and its properties & to solve certain linear differential equations using Laplace transform technique.

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.U15PHT101/ ENGINEERING PHYSICS (Common to all branches of Engineering and Technology)	L	T	P	C
	3	0	0	3

COURSE OBJECTIVES

At the end of the course the students would be exposed to fundamental knowledge in

- Various engineering subjects and applications.
- Structure identification of engineering materials.
- Non-destructive techniques.
- Interferometric techniques in metrology and electrical phenomena.
- Application of lasers in engineering and technology.
- Atomic and Nuclear related theories.

CRYSTAL PHYSICS **9 Hours**

Space lattice – unit cell – lattice planes – Bravais space lattices – Miller indices – calculation of interplanar distances – Atomic radius – co- ordination number – Packing factor for SC, BCC, FCC and HCP structures – crystal imperfections – point defects – line defects – surface defects – volume defects – effect of crystal imperfections.

APPLIED OPTICS **9 Hours**

Interference – airwedge and its applications - Lasers – spontaneous and stimulated emissions – Einsteins coefficients – Nd: YAG, Co_2 and semiconductor laser – Homojunction and Hetrojunction (only qualitative description) – applications – CD-ROM and holography (qualitative only) – optical fibre – principle and propagation of light in optcal fibers – Numerical aperture and acceptance angle – types of optical fibres – applications – fibre optic communication system – medical endoscopy.

QUANTUM PHYSICS **9 Hours**

Plancks quantum theory of black body radiation (derivation) – Photo electric effect – Compton effect (derivation) and experimental verification of Compton effect – De-broglies concept - Schrodinger wave equation – time independent and time dependent equations (derivations) – physical significance of wave function – particle in a box (one dimensional case) – Electron microscope – Scanning electron microscope – Transmission electron microscope.

ULTRASONICS AND NDT **9 Hours**

Introduction – production – magnetostriction effect – magnetostriction generator – piezoelectric effect – piezo electric generator –properties –detection – cavitation –acoustic grating – velocity measurement – applications –Sonar –velosity of blood flow – NDT –Liquid Penetrant method –

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Ultrasonic flaw detector – A scan, B scan, C scan – X- ray radiography and fluoroscopy – Thermography.

ATOMIC AND NUCLEAR PHYSICS **9 Hours**

Introduction – Atomic spectra – Molecular spectra – Applications – Raman effect – Stokes lines and anti stokes lines – Applications – Nuclear models – Liquid drop model –Nuclear fission – Theory – Energy released per fission – Chain reaction – Controlled chain reaction – Nuclear reactors – Condition for sustained chain reaction – Types of Nuclear reactors – Nuclear fusion – Thermo nuclear reactions – Differences between fission and fusion

TOTAL: 45 HOURS

REFERENCES

1. Rajendran V, Applied Physics, Tata McGraw Hill Publishing Company Limited, New Delhi, 2003.
2. Gopal S., Engineering Physics, Inder Publications, Coimbatore, 2006.
3. Palinisamy P.K., Engineering Physics I, Scitech Publications, Chennai, 2011.
4. Avadhanulu M.N. andKshirsagar P.G., A textbook of Engineering Physics, S.Chand & Company Ltd, New Delhi,2005.
5. Gaur R.K. and Gupta S.L., Engineering Physics, 8th edition, DhanpatRai Publications (P) Ltd., New Delhi, 2003.

COURSE OUTCOMES

After successful completion of this course, the students should be able to:

CO1: Analyze and identify the crystal structure in materials
CO2: Categorize and illustrate the optical materials and its application to engineering
CO3: Examine and compare samples at nano level
CO4: Apply the NDT techniques and modern engineering tools necessary for engineering practice.
CO5: Discuss the role of nulear physics in energy production

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U15PH*T*203 / MATERIALS SCIENCE *(Common to ECE, EIE, CSE & IT)*	L	T	P	C
	3	0	0	3

COURSE OBJECTIVES

At end of the course students would be exposed to

- Conducting, super conducting, magnetic and dielectric materials in electrical devices.
- Semi conducting, optical and new engineering materials in switching and display devices, data storage.

CONDUCTING AND SUPERCONDUCTING MATERIALS 9 Hours

Conducting Materials : Classical free electron theory of metals-Electrical conductivity – Thermal conductivity - expression – Wiedemann Franz law(derivation) – Lorentz number – drawbacks of classical theory – Fermi distribution function – density of energy states – effect of temperature on Fermi energy.

Superconducting Materials : Superconducting phenomena – properties of superconductors – Meissner effect, Isotope effect, Type I &Type II superconductors – High Tc superconductors - Applications – cryotron, magnetic levitation and squids.

SEMICONDUCTING MATERIALS 9 Hours

Origin of band gap in solids (Qualitative treatment only) - carrier concentration in an intrinsic semi conductor (derivation) – Fermi level – variation of Fermi level with temperature - Electrical conductivity – band gap semiconductor – carrier concentration in n-type and p-type semi conductors (derivation) – Variation of Fermi level with temperature and impurity concentration – Hall effect – Determination of Hall coefficient – experimental set up – Applications.

MAGNETIC & DIELECTRIC MATERIALS 9 Hours

Magnetic Materials : Properties of dia, para, ferro, anti ferro and ferri magnetic materials - Langevin's theory of paramagnetism – Weiss theory of Ferromagnetism – Domain theory of ferromagnetism - hysteresis – soft and hard magnetic materials – Ferrites – Applications - magnetic recording and readout - Storage of magnetic data, Tapes, floppy, magnetic disc drives – Bubble memory .

Dielectric Materials: Electronic, ionic, orientation and space charge polarization - Frequency and temperature dependence of polarization – Dielectric loss – Dielectric breakdown – different types of break down mechanism - Ferro electric materials - properties and applications.

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NEW ENGINEERING MATERIALS AND NANOTECHNOLOGY 9 Hours

New Engineering Materials : Metallic glasses – preparation, properties and applications – Shape memory alloys (SMA) – characteristics, properties of NiTi alloy applications - advantages and disadvantages of SMA.

Nano Materials : synthesis - plasma arcing – Chemical vapour deposition – sol-gel - Electro deposition – ball milling – properties of nanoparicles and applications. – Carbon nano tubes – fabrication - arc method – pulsed laser deposition - Chemical vapour deposition - structure, properties & applications.

OPTICAL MATERIALS 9 Hours

Optical properties of semiconductors – Excitons- Traps – colour centre – Types of colour centres – luminescence – fluorescence and phosphorescence - liquid crystal display – Dynamics scattering display – Twisted nematic crystal display – Non- linear materials – second harmonic generation – optical mixing – optical phase conjugation.

TOTAL: 45 HOURS

REFERENCES

1. Pillai S.O., Solid State Physics, 5th edition, New Age International Publication, New Delhi, 2003
2. Gopal S., Materials Science, Inder Publications, Coimbatore, 2007.
3. Palanisamy P.K., Materials Science, 2nd edition, Scitech Pub. India, (P) Ltd., Chennai, 2003.
4. Gaur R.K. and Gupta S.L., Engineering Physics, 8th edition, Dhanpat Rai Publications (P) Ltd., New Delhi, 2003 (Units: 1,2).
5. Rajendran V., Marikaniv A., Materials science, 5th edition, Tata Mc-Graw-Hill publishing company Ltd., 2004 (Units: 3,4,5).

COURSE OUTCOMES

After successful completion of this course, the students should be able to:

CO1: Apply core concepts in Materials Science to solve engineering problems
CO2: Determine the position of the acceptor or donor levels and the brand gap of an extrinsic semiconductor,
CO3: Classify & differentiate the structure and physical properties of conducting materials
CO4: Apply the techniques to manufacturing of modern materials for engineering practice.
CO5: Recognize the various nanomaterials for engineering and technological applications

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U15PH*P*101/ U15PH*P*201 PHYSICS LABORATORY (Common to all branches of Engineering and Technology)	L	T	P	C
	0	0	2	1

COURSE OBJECTIVES

- The experiments are designed to illustrate phenomena in different areas of Physics and to expose you to measuring instruments.
- The laboratory provides a unique opportunity to validate physical theories in a quantitative manner.
- Laboratory experience demonstrates the limitations in the application of physical theories to real physical situations.
- In general, the purpose of these laboratory exercises is both to demonstrate some physical principle and to teach techniques of careful measurement

LIST OF EXPERIMENTS

Any Ten Experiments

1. Lee's disc - determination of thermal conductivity of a bad conductor
2. Air wedge - determination of thickness of agiven specimen.
3. Spectrometer - determination of wavelength of mercury source using grating
4. Compound pendulum - determination of accelaration due to gravity.
5. Carey foster bridge – determination of specific resistance of given coil of wire.
6. Viscosity - determination of co-efficient of viscosity of a liquid by poiseuille's flow method.
7. Non-uniform bending – determination of Young's modulus
8. Ultrasonic interferometer –determination of velocity of sound and compressibility of liquid.
9. Band gap determination of a semiconductor using post office box
10. Semiconductor laser:
    a. Determination of wavelength of laser using grating
    b. Particle size determination
    c. Acceptance angle of optical fibre
11. Torsional pendulum - determination of Rigidity modulus of the wire
12. Field along the axis of a coil – Determination of magnetic moment.

TOTAL: 45 HOURS

COURSE OUTCOMES

After successful completion of this course, the students should be able to:

CO1: Determine different physical properties of a material like the thermal conductivity thickness of the material, etc.
CO2: Perform experiments involving the physical phenomena like interference and diffraction.
CO3: Apply physical theories in real life situations by also taking into account its limitations

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U15CH*T*101/ ENGINEERING CHEMISTRY (Common to all branches of Engineering and Technology)	L	T	P	C
	3	0	0	3

COURSE OBJECTIVES

- To inculcate an understanding of the importance of chemistry by providing an overall perspective of theoretical and modern technological aspects of applied chemistry before beginning their more specialized courses.
- To embellish the usage of chemistry to exhibit engineering and technical concepts

ELECTROCHEMISTRY **9 Hours**

Introduction - Electrode potential – Nernst equation and problems - Electrochemical series - Application of EMF measurements & problems - Kohlrausch law of independent migration of ions & its application - Conductometric titrations (acid - base & precipitation titration)

Electrodes : Standard and reference electrode (Hydrogen & Calomel) – Types of electrodes (Metal – Metal ion; Metal – Metal insoluble salt, Redox electrode) - Ion selective (glass electrode) – determination of pH using glass electrode
Cells : Galvanic cell – Types of concentration cells

ENERGY STORING DEVICES **9 Hours**

Batteries : Primary Battery (Lechlanche & Alkaline battery) - Secondary Battery (Lead acid storage battery, Nickel - Cadmium battery & Lithium – Polymer battery) – Flow battery (Hydrogen and Oxygen Fuel Cell)

Solar Cells: Hybrid Solar cells
Nuclear Reactors: Light water nuclear power plant (nuclear fission) - ICF (nuclear fusion)

THERMODYNAMICS **9 Hours**

Introduction - Thermodynamic process (isothermic, isobaric, isochoric and adiabatic processes) - Internal energy – first law of thermodynamics (Mathematical derivation & limitation) - Enthalpy - Second law of thermodynamics - Entropy - Entropy change of an ideal gas & problems - Free energy - work function - Gibbs Helmholtz equation (derivation, applications & problems) - Van't Hoff isotherm (derivation & problems) - Van't Hoff isochore - (derivation & problems) - Third law and zeroeth law (Only statements)

SURFACE CHEMISTRY **9 Hours**

Introduction of adsorption - Types of Adsorption - Adsorption isotherm (Freundlich isotherm, Langmuir adsorption isotherm, BET isotherm) - Applications of adsorption : Role of adsorption

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in catalytic reactions, Ion exchange adsorption, adsorption chromatography (Column chromatography)

SPECTROSCOPY **9 Hours**

Introduction to spectroscopy - Beer Lambert's Law - Colorimetric analysis (principle, instrumentation (block diagram only) & application (Estimation of concentration of Ferrous and copper ions a solution by colorimetry) - UV – visible spectroscopy (principles, instrumentation (block diagram only) & simple Applications) - IR spectroscopy (principles, instrumentation (block diagram only) & simple applications) - Flame photometry (Principle, instrumentation (block diagram only) & simple Applications)

TOTAL: 45 HOURS

REFERENCES

1. Bahl B.S.,Tuli G.D. and ArunBahl., Essential of Physical Chemistry, S.Chand& Co. Ltd., New Delhi.
2. Somorjai G.A., Introduction to surface chemistry and Catalysis, John Wiley & Sons Inc., New York.
3. Shaw D.J., Introduction to colloidal and surface Chemistry, Butterworth – Heinemann Publishers
4. Syed Shabudeen, P.S. and Shoba U.S., Engineering Chemistry, Inder Publishers, Coimbatore.
5. Jain P.C. and Monika Jain, Engineering chemistry, Dhanpatrai Pub. Co. (P) Ltd., New Delhi.
6. Puri B.R., Sharma L.R. and Pathania M.S., Principles of Physical chemistry, ShobanLal Nagin Chand & Co., New Delhi

COURSE OUTCOMES

After successful completion of this course, the students should be able to:

CO1: Assemble a battery and illustrate the phenomenon of production of electric current
CO2: Discuss the thermodynamic concepts and predict the feasibility of chemical reaction
CO3: Apply the theory of adsorption in real life situations
CO4: Outline the principles and instrumentation of spectroscopic techniques

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U15CH*T*203/ CHEMISTRY FOR CIRCUIT ENGINEERING *(Common For ECE, EEE, EIE, IT)*	L	T	P	C
	3	0	0	3

COURSE OBJECTIVES

To impart a sound knowledge on basics of

- Theoretical and modern technological aspects of modern polymeric materials technology for micro electrical, electronics, instrumentation and communication fields.

INTRODUCTION TO CONDUCTING POLYMERIC MATERIALS 9 Hours

Formation of polymers – Types of polymers - chain growth and step growth polymerization – Mechanisms - copolymerization - Thermoplastics and thermosets - Micro structures in polymers – polymer length - molecular weight - amorphous and crystalline - thermal transitions in plastics.

APPLIED CONDUCTING POLYMERS 9 Hours

Synthesis, structure, morphology, conductivity, doping theory and uses of Poly(sulfur nitride), Polyacetylene, Polyphenylene, Poly(phenylene vinylenes), Poly(phenylene sulfide), Polypyrrole and Polythiophene, Polyaniline - Polymers with transition metals in the side-group structure and their uses (includes Stacked Phthalocyanine polymers).

MANUFACTURING METHODS OF ORGANO ELCTRONICS MATERIALS 9Hours

Organo-electronic materials – classification – Production of substrates for organic electronics - Reel-to-reel Vacuum metallization - Organic vapor phase deposition – production of TFTs, OLED, organic photovoltaics - Micro and nanofabrication techniques – Solution based printing.

ORGANIC ELECTRONIC MATERIALS 9 Hours

Organic thin-film transistor (OTFT) – architecture, operating mode - fabrication techniques - structure-property relationship - methods of improving performance – structural perfection - device architecture - electrical and environmental stability – chemical effects on stability - Gate dielectrics on electrical functionality.

ADVANCED MATERIALS FOR ORGANIC ELECTRONICS 9 Hours

Pentacene transistors – performance - Engineered pentacenes – reversible functionalization – end - substituted derivatives - perifunctionalized pentacenes – Heteropentacenes - Semiconductors based on polythiophene and Indolo[3,2-*b*]carbazole – polydialkylterthiophenes – polydialkylquaterthiophenes - polythiophene nanoparticles - indocarbazole designs.

TOTAL: 45 HOURS

Chairman of BOS Signature

REFERENCES

1. Kiichi Takemoto, Raphael M. Ottenbrite, Mikiharu Kamachi, Functional Monomers and Polymers, CRC Press, New York.
2. Kaiser A.B., Electronic properties of conjugated polymers, Basics models and applications, Springer verlag, Berlin.
3. Chilton J.A. and Goosey M.T., Special polymers for electronics and optoelectronics, Kluwer Academic Pub., London.
4. Hagen Klauk, Organic Electronics: Materials, Manufacturing and Applications, Wiley – VCH, Weinheim
5. Hand book of Conducting Polymers, e-book
6. Gowariker V.R., Viswanathan N.V. and Jayadev Sreedhar, Polymer Science, New Age Int. Pvt. Ltd., New Delhi

COURSE OUTCOMES

After successful completion of this course, the students should be able to:

CO1: Analyse and determine the required conducting polymers in fabrication of organic electronic devices
CO2: Describe the mechanism of formation of conducting polymeric materials
CO3: Design an Organic Thin film transistor
CO4: Outline the performance of Pentacene transistors

Chairman of BOS Signature

U15CH*P*101/ U15CH*P*201 CHEMISTRY LABORATORY (Common to all branches of Engineering and Technology)	L	T	P	C
	0	0	2	1

COURSE OBJECTIVES

- To apply the theoretical principles and perform experiments
- Experience the importance of theory by using analytical equipments and quantitative and qualitative procedures.

LIST OF EXPERIMENTS

PREPARATION OF SOLUTIONS (STANDARD)

1. Preparation of normal solutions of the following substances - oxalic acid, sodium carbonate, hydrochloric acid.
2. Preparation of phosphate buffer using Henderson equation.

WATER TESTING

3. Determination of total, temporary and permanent hardness by EDTA method.
4. Estimation of DO by Winkler's method.
5. Estimation of alkalinity by Indicator method.
6. Estimation of chloride by Argentometric method.

ELECTRO CHEMICAL ANALYSIS

7. Estimation of hydrochloric acid by pH metry.
8. Conductometric titration of mixture of acids and strong base
9. Conductometric precipitation titration using $BaCl_2$ and Na_2SO_4.
10. Estimation of Iron by Potentiometry

PHOTOMETRY

11. Estimation of the Ferrous ions (Thiocyanate method) by Spectrophotometry.
12. Estimation of sodium and potassium by Flame photometry.

TOTAL: 45 HOURS

REFERENCES

1. Jeffery G.H., Bassett J., Mendham J. and Denny R.C., Vogel's Text Book ofQuantitative Chemical Analysis, Oxford, ELBS, London, 2002.
2. Shoemaker D.P. and C.W. Garland., Experiments in Physical Chemistry, TataMcGraw-Hill Pub. Co., Ltd., London, 2003.
3. Shoba U.S., Sivahari R. and Mayildurai R., Practical Chemistry, Inder Publications, Coimbatore, 2009.

Chairman of BOS Signature

COURSE OUTCOMES

After successful completion of this course, the students should be able to:

CO1: Prepare normal solutions
CO2: Analyse the properties of water by applying the chemical concepts
CO3: Estimate the concentration of solutions by electrochemical methods and apply it in real life situations like blood testing etc

Chairman of BOS Signature

U15CS*T*101/ U15CS*T*201 STRUCTURED PROGRAMMING USING C	L	T	P	C
	2	2	0	3
(Common to all branches of Engineering and Technology)				

COURSE OBJECTIVES

- To enable students to learn about the basics of computers and problem solving methods
- To learn the various features of C
- To learn how to program using C language

INTRODUCTION **9 Hours**

Programs and Programming- Programming languages and Their Classification - Compiler, Linker, Loader and Interpreter – Structured Programming Concept –Algorithm – Pseudo Code – Flow Chart.Number System – Binary – Decimal – Conversion Problems.

C LANGUAGE BASICS **9 Hours**

Introduction to C Programming – Fundamentals – Structure of a C Program – Compilation And Linking Processes – Constants, Variables – Data Types – Expressions Using Operators In C – Managing Input And Output Operations – Decision Making And Branching – Looping Statements – Solving Simple Scientific And Statistical Problems.

ARRAYS AND STRINGS **9 Hours**

Arrays – Initialization – Declaration – One Dimensional And Two Dimensional Arrays. String- String Operations – String Arrays. Simple Programs - Sorting- Searching – Matrix Operations.

FUNCTIONS, STORAGE CLASSES AND POINTERS **9 Hours**

Functions: Definition of function – Declaration of function – Pass by value – Pass by reference – Recursion.

Storage classes – auto, static, extern, register- scope rules.

Pointers: Definition – Initialization – Pointers arithmetic – Pointers and arrays - Dynamic memory allocation - Example Problems

STRUCTURES, UNIONS AND FILES **9 Hours**

Structures and Unions: Introduction – need for structure data type – structure definition – Structure declaration – Structure within a structure - Union - Programs using structures and Unions.

Files: Introduction – Using files in C - Working with text files.

L: 45Hr; T: 15Hr; TOTAL = 60 HOURS

Chairman of BOS Signature

REFERENCES

1. Pradip Dey and Manas Ghosh, "Programming in C", Second Edition, Oxford University Press, 2011.
2. Rajasekaran S, "Numerical methods in Science and Engineering-A practical approach", S.Chand and Company, New Delhi-55, 2012.
3. Kernighan,B.W and Ritchie,D.M, "The C Programming language", Second Edition, Pearson Education, 2006
4. Byron S Gottfried and Jitendar Kumar Chhabra, "Programming with C", Tata McGraw Hill Publishing Company, Third Edition, New Delhi, 2011.
5. Ashok N. Kamthane, "Computer programming", Pearson Education, 2007.

COURSE OUTCOMES

After successful completion of this course, the students should be able to:

CO1: Explain the basics of programs and programming
CO2: Select appropriate data types and control structures for solving a given problem.
CO3: Illustrate the representation of arrays, strings and usage of string operations.
CO4: Illustrate the importance of pointers and dynamic memory allocation.
CO5: Explain the basics of file handling mechanism.

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Chairman of BOS Signature

U15CS*P*101/ U15CSP201 STRUCTURED PROGRAMMING LABORATORY USING C (Common to all branches of Engineering and Technology)	L	T	P	C
	0	0	4	2

COURSE OBJECTIVES

- To enable students to solve problems using C
- To apply the various features of C

LIST OF EXPERIMENTS

1. Simple programs
   - To find whether the given number is prime or not
   - Factorial of the given number
2. Programs involving Control and Looping Structures
   - Arithmetic Progression
   - Trigonometric series evaluation
3. Programs using Arrays
   - Sorting
   - Matrix addition and Multiplication
4. Calculation of median of a frequency distribution.
5. Evaluation of integrals
   - Trapezoidal Rule
6. String Processing
7. Program using Recursive function
8. Using pointers in C
9. Program using Functions, Structures and Files
   - Students Mark Analysis
10. Iterative method for finding Roots of the polynomials
    - Lagrange interpolation method

TOTAL: 45 HOURS

COURSE OUTCOMES

After successful completion of this course, the students should be able to:

CO1: Demonstrate code reusability using recursive and non-recursive functions.
CO2: Implement pointers, memory allocation techniques and files in 'C' language.
CO3: Apply and practice logical ability to solve simple problems.
CO4: Demonstrate 'C' programs for statistical and scientific problem solving.

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U15EE*T*212/ ELECTRICAL AND ELECTRONIC CIRCUITS	L	T	P	C
	3	0	0	3
(Common to CSE & IT)				

COURSE OBJECTIVES

- To study the characteristics of circuit elements
- To understand relationships among current, voltage and power in DC and AC circuits
- To study the construction, characteristics and applications of amplifiers and oscillators circuitry

DC CIRCUITS **9 Hours**

Electrical quantities – SI units – Circuit elements – Ohm's law – Kirchoff's laws – DC series and parallel circuits – Mesh and nodal analysis – Star to delta conversions – Simple problems.

AC CIRCUITS **9 Hours**

Sinusoidal excitation – RMS , Average and Peak values – Phasor representation – Power factor – Single phase RC,RL and RLC circuits – Series and Parallel resonance – Introduction to three phase circuits: V, I and P equations – Simple problems.

SEMICONDUCTOR DIODE AND APPLICATIONS **9 Hours**

N and P type semiconductors – PN junction – Biasing – VI characteristics – Diode operation – Rectifiers – Half wave, Full wave , Bridge rectifiers – Power supply filters – Zener diode – Applications – Optical diode.

TRANSISTORS AND APPLICATIONS **9 Hours**

Transistors – Operation, Characteristics, Biasing – BJT amplifiers – CE – CB – CC – Multistage amplifiers – JFET, MOSFET – Characteristics, Biasing – SCR – Phototransistor.

OSCILLATORS AND OPERATIONAL AMPLIFIERS **9 Hours**

Principle of oscillators – RC feedback Circuits – LC feedback circuits – Relaxation oscillators – Introduction to Operational Amplifiers – Input modes and Op- amp parameters – Op-amp with negative feedback – Comparator – Summing amplifier – Integrator and Differentiator.

L: 45Hr; T: 15Hr; TOTAL = 60 HOURS

Chairman of BOS Signature

REFERENCES

1. Edminister and Nahvi, Electronic Circuits, Schaum's outlines, Tata MCGraw – Hill, 1999.
2. Robert L. Boylested and Louis Nahelsky, Electronic Devices & Circuit theory, 7th Edition, Prentice Hall, 1999.
3. Choudhury R. and Jain S., Linear Integrated Circuits, 3rd edition, New Age Pub., 2007.
4. David A. Bell, Electronic Devices and Circuits, Prentice Hall of India, 2004.
5. Muthusubramaniam R., Salivahanan S. and Muraleedharan K.A., Basic Electrical Electronics and Computer Engineering, Tata McGraw Hill, 2nd edition, 2006
6. Thomas L. Floyd, Electronic Devices, 6th edition, Pearson Education, 2003

COURSE OUTCOMES

After successful completion of this course, the students should be able to:

CO1: Define & identify the basic electrical quantities and also able to calculate approximately the voltage, current parameters in DC circuits using basic laws.
CO2: Understand the phasor representation of various AC circuit parameters and acquire knowledge on fundamentals of three phase ac circuits.
CO3: Differentiate the various semiconductor diodes and rectifiers
CO4: Summarize the characteristics of different types of transistors.
CO5: Apply the achieved basic knowledge about oscillators & op-amp to different dc applications.

Chairman of BOS Signature

U15IT*T*101/ FOUNDATIONS OF INFORMATION TECHNOLOGY	L	T	P	C
(Common to CSE & IT)	3	0	0	3

COURSE OBJECTIVES

- Acquire an overview of data storage and manipulation in computers
- Understand the basic concepts of operating systems , networks and database
- Know the applications of Internet and Information Technology

COMPUTER BASICS AND ARCHITECTURE **9 Hours**

Information Technology Basics: Introduction - Role of IT - Information Technology and Internet

Computer Organization and Architecture: Introduction – CPU - Communication among various units - Instruction Format-Instruction Cycle - Instruction Set - Data Representation in Computers - Coding schemes

Computer Memory and Storage: Memory Hierarchy - Types of Memory - CPU interaction with memory - Secondary Storage devices and its types

BASICS OF OPERATING SYSTEMS AND NETWORKS **9 Hours**

Operating systems: Evolution-Types of Operating System –Functions of Operating System-Coordinating machine activities-Handling competition among processes

Data Communication and Computer Networks: Introduction - Data Communication - Transmission Media - Modulation-Multiplexing – Switching - Network Topologies - Communication Protocol - Network devices

BASICS OF INTERNET AND DATABASES **9 Hours**

Internet and Internet Tools: Internet Basics - Applications of Internet - Data over Internet - Web Browser - Email, Search Engines, Instant Messaging

Database Fundamentals: Logical and Physical Data Concepts - Database Management System – Architecture - Database Models - Types of databases - Data warehousing and Mining

COMPUTER SOFTWARE AND COMPUTER SECURITY **9 Hours**

Introduction to Software - Categories of Software - Software Piracy - Software Terminologies

Computer Security : Security Threats - Malicious Programs – Cryptography - Digital Signature – Firewall - User Identification and Authentication

Chairman of BOS Signature

BASICS OF MULTIMEDIA AND FUTURE TRENDS IN IT **9 Hours**

Multimedia Essentials: Building blocks - Multimedia system - Applications of multimedia E-Commerce – EDI - Wireless Application Protocol - Smart Card - IPTV Blogging – RFID - Brain Computer Interface

TOTAL: 45 HOURS

REFERENCES

1. ITL Education solutions limited, Introduction to Information Technology, Pearson Education,2012
2. J. Glenn Brookshear , Computer Science: An Overview,11th edition, Pearson Education,2012
3. V.Rajaraman, Introduction to Information Technology,2nd Edition, PHI Learning Private Limited,2013

COURSE OUTCOMES

After successful completion of this course, the students should be able to:

CO1: Outline various functional components of computer system.[K2]
CO2: Summarize the functions of operating systems, the different types of network topologies & protocols. [K2]
CO3: Explain the various internet tools and fundamentals of database.[K2]
CO4: Interpret the need of computer security. [K2]
CO5: Explain the basics of multimedia and the future trends in IT. [K2]

Chairman of BOS Signature

U15ITP101/ COMPUTER HARDWARE AND PERIPHERALS LABORATORY *(For Information Technology)*	L	T	P	C
	0	0	4	2

COURSE OBJECTIVES

- Acquire in-depth practical knowledge of the computer hardware and computer networks.
- Understand the assembly of PC and connection of networks
- Develop skill related to the trouble shooting and configuration of PC.

LIST OF EXPERIMENTS

1. Study of different types of cables and network topologies
2. Study of different types of network devices
3. Study and identification of Major parts of PC
4. Assembly and Disassembly of PC
5. Connecting a small LAN
6. IP configuration and Subnet masking.
7. Study and troubleshoot the boot process
8. Installation and configuration of Windows 2000
9. Implementation of Wireless Network
10. Study, Identification, Assembly and Disassembly of Printer and Monitor

TOTAL: 45 HOURS

COURSE OUTCOMES

After successful completion of this course, the students should be able to:

CO1: Explain the various computer hardware components and their functionality. [S]
CO2: Illustrate the assembling process of a computer system. [S]
CO3: Explain the local area network and file sharing methods. [S]
CO4: Perform the installation of Windows and Linux operating system. [S]
CO5: Explain the configuration of wireless adapter. [S]

Chairman of BOS Signature

U15ME*T*101/ U15ME*T*201 ENGINEERING GRAPHICS (Common to all branches of Engineering and Technology)	L	T	P	C
	2	4	0	4

COURSE OBJECTIVES

- To understand the principle of orthographic projection of points, lines, surfaces and solids.
- To understand the principle of section and development of solids.
- To understand the principle of Isometric and Perspective projections.
- To study the principle of free-hand sketching techniques.

PLANE CURVES, PROJECTION OF POINTS AND LINES **15 Hours**

Importance of graphics in design process, visualization, communication, documentation and drafting tools, Construction of curves - ellipse, parabola, and hyperbola by eccentricity method only. Orthographic projection of points.

Projections of straight lines located in first quadrant - determination of true length and true inclinations.

PROJECTIONS OF SURFACES AND SOLIDS **15 Hours**

Projections of plane surfaces - polygonal lamina and circular lamina, located in first quadrant and inclined to one reference plane., Projection of simple solids - prism, pyramid, cylinder and cone. Drawing views when the axis of the solid is inclined to one reference plane.

SECTION OF SOLIDS AND DEVELOPMENT OF SURFACES **15 Hours**

Sectioning of simple solids - prisms, pyramids, cylinder and cone. Obtaining sectional views and true shape when the axis of the solid is vertical and cutting plane inclined to one reference plane.

Development of lateral surfaces of truncated prisms, pyramids, cylinders and cones.

PICTORIAL PROJECTIONS **15 Hours**

Isometric projection, Isometric scale, Isometric views of simple solids, truncated prisms, pyramids, cylinders and cones.

Perspective projection of prisms and pyramids when its base resting on the ground by vanishing point method.

FREE-HAND SKETCHING **15 Hours**

Free hand sketching techniques, sketching of orthographic views from given pictorial views of objects, including free-hand dimensioning.

Sketching pictorial views from given orthographic views.

L: 30Hr; T: 45Hr; TOTAL = 75 HOURS

REFERENCES

Chairman of BOS Signature

1. Basant Agrawal and CM Agrawal, Engineering Drawing, McGraw-Hill, New Delhi, First Edition, 2008.
2. Venugopal K. and Prabhu Raja V., Engineering Graphics, New Age International (P) Limited, New Delhi, 2008.
3. Nataraajan K.V., Engineering Drawing and Graphics, Dhanalakshmi Publisher, Chennai, 2005.
4. Warren J. Luzadder and Jon. M. Duff, Fundamentals of Engineering Drawing, Prentice Hall of India Pvt. Ltd., New Delhi, Eleventh Edition, 2005.
5. Gopalakirishna K.R., Engineering Drawing (Vol. I & II), Subhas Publications, 2001.

COURSE OUTCOMES

After successful completion of this course, the students should be able to:

CO1: Construct various plane curves and projection of lines and surfaces.
CO2: Develop projection of surfaces and solids.
CO3: Solve problems in sections of solids and development of surfaces.
CO4: Apply the concepts of isometric, and perspective projections
CO5: Apply free hand sketching in engineering practice.

Chairman of BOS Signature

U15ME*P*101 / U15ME*P*201 ENGINEERING PRACTICES LABORATORY (Common to all branches of Engineering and Technology)	L	T	P	C
	0	0	4	2

LIST OF EXPERIMENTS

GROUP – I **21 Hours**

A. CIVIL ENGINEERING

1. Carpentry

- Study of carpentry tools
- Preparation of T joint
- Preparation of dovetail joint

2. Plumbing

- Study of pipeline joints

B. MECHANICAL ENGINEERING

1. Fitting

- Study of fitting tools
- Preparation of L joint
- Preparation of square joint

2. Sheet Metal Working

- Study of sheet metal working tools
- Preparation of cone and tray

3. Welding

- Study of arc welding tools and equipment
- Preparation of butt joint

GROUP - II (ELECTRICAL & ELECTRONICS ENGINEERING)

C. ELECTRICAL ENGINEERING PRACTICE **12 Hours**

- Basic household wiring using switches, fuse, indicator-lamp, etc.,
- Preparation of wiring diagrams.
- Stair case light wiring.
- Tube light wiring
- Study of iron-box, fan with regulator, emergency lamp and microwave oven.

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D. ELECTRONIC ENGINEERING PRACTICE **12 Hours**

1. Assembling simple electronic component on a small PCB and Testing.
2. Soldering simple electronic circuits and checking continuity.
3. Measurements using digital multimeter.
   - DC and AC voltage measurement
   - DC and AC current measurements.
   - Resistance Measurement.
   - Continuity measurement.
4. Testing of Electronic components
   - Resistors
   - Inductors and capacitors
   - Diodes (resistance in forward bias and reverse bias)
   - Transistors
5. Study of CRO and Function generator
   - Study of Panel Controls
   - Measurement of Amplitude, Frequency, phase difference

TOTAL: 45 HOURS

COURSE OUTCOMES

After successful completion of this course, the students should be able to:

CO1: Select the various tools and equipments used in the fabrication workshop.
CO2: Develop various models in carpentry, fitting,
CO3: Make components using sheet metal work and welding.
CO4: Demonstrate and evaluate the parameters of basic electronic components (wires, resistors, capacitors, diodes etc.) and test the components.
CO5: Estimate DC and AC Voltage and currents using appropriate measuring instruments.

Chairman of BOS Signature

U15GH*P*101/ PERSONAL VALUES (Common to all branches of Engineering and Technology)	L	T	P	C
	0	0	2	1

COURSE OBJECTIVES

- To inspire students to become best Humans.
- To know about self.
- To overcome evil temperaments.
- To live with sound health.
- To reach Intuition.

HUMAN LIFE & EXCELLENCE **4 Hours**

Human Excellence: Introduction – objective – personal values - importance.

Life : Self – Society – Nature – Yoga – purpose of life – philosophy of Human life.

Body, Soul, Mind & Their Functional Relationship : Panchboothas and it's association – Form of the body : physical body, astral body, causal body - Effect: Pain, Disease, Death; Soul – Life force – Bio magnetism – Genetic Centre – Mind : Origin & it's ten stages.

INTROSPECTION & THOUGHT ANALYSIS **4 Hours**

Introduction – Importance – Blemishes – Six evil temperaments & their maneuvering.

Thought analysis: Introduction - process of thought – Mind & Thought relationship – causes for origin of thoughts

Exercise: Training & Practice of Thought analysis

MORALIZATION OF DESIRE **2 Hours**

Desire : Introduction – Causes – Types – Contra qualities evolving out of desire – Effect of unfulfilled desire – Renunciation – Is attainment of desire in harmony with Law of Nature.

Training : Moralization of Desire.

NEUTRALIZATION OF ANGER **2 Hours**

Introduction – Origin of Anger – Alternative forms of Anger – A chain action – Consequence of anger on self & others – Neutralization of anger – the point where anger is won.

Training : Neutralizing anger.

ERADICATION OF WORRIES **2 Hours**

Worry: Causes - Effects – Types of problems – Solution to problems – Overcoming Worries.

Training – Eradication of Worries.

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REALIZATION OF SELF **2 Hours**

Transformation Theory – Understating Self – Guru's role in guiding – Who am I? – Shaping One's destiny.

Training : Realization of self.

THEORY & PRACTICAL SESSION ON PHYSICAL EXERCISE: **9 Hours**

Introduction – Hints & caution – Live in Health and harmony – Hand Exercise – Leg Exercise – Neuro muscular breathing Exercise – Kapalapathy – Magarasanas I & II – Massage – Acu-pressure – Body relaxation .

MEDITATION **5 Hours**

Meditation: Agna Meditation – Shanthi Meditation.

TOTAL: 30 HOURS

1. Vethathiri's Maharishi's, ***"Manavalakalai part 1,2&3"*** 11th edition, The World Community Service Centre, Vethathiri Publications,1994.
2. Vethathiri Maharishi's, ***"Rejuvenating Life Force and Mind"*** – paper-III for M.A. Yoga for Human Excellence" 3rd edition, The World Community Service Centre, Vethathiri Publications, 2010.
3. Swami Vivekananda, "***Selections from the complete works"*** 23th edition , The Ramakirshna Mission Institute of Culture, 2007
4. Vethathiri's Maharishi's, ***"Yoga for Modern Age",*** The World Community Service Centre, Vethathiri Publications, 2009.
5. Vethathiri's Maharishi's, ***"Mind"*** The World Community Service Centre, Vethathiri Publications, 1999.
6. Russell Kelfer, "Self Control", Tyndale House Publishers, 1985.
7. Swami Vivekananda, "***Karma Yoga"*** 39th edition, The Ramakirshna Mission Institute of Culture, 2008.

COURSE OUTCOMES

After successful completion of this course, the students should be able to:

CO1: Acquire knowledge on the individual in relation to Nature and Society.
CO2: Analysis purity of Thoughts, Moralization of Desire
CO3: Learn about Neutralization of Anger.
CO4: Develop skills in Sky yoga and Kaya kalpa.

Chairman of BOS Signature

U15GH*P*201/ FAMILY&PROFESSIONAL VALUES (Common to all branches of Engineering and Technology)	L	T	P	C
	0	0	2	1

COURSE OBJECTIVES

- To inculcate the basic need for family life and need to maintain peace in it.
- To lead spiritual development through good family life.
- To know the 5C's & 5E's.
- To know the examples for Self Control.
- To practice meditation & Pranayamam.

PEACE IN FAMILY **4 Hours**

Family value: Meaning – Introduction – Essential family values – Greatness of friendship - Family members and their responsibility – Reason for misunderstanding in the family – Individual & family peace – Peace of mind – Vital behavioral requisites.

Greatness of womanhood: Good culture – Cultured behavioral patterns – Love and Compassion.

BLESSING – EFFECTS IN FAMILY **2 Hours**

Introduction - Benefits – Mental Frequency level - Effect of vibrations – Make blessings a daily habit.

Training: Method of blessings.

FOOD IS MEDICINE **2 Hours**

Food is medicine - Healthy food habits- Method of Medicinal food preparations – Food based on character.

PERSONALITY DEVELOPMENT CONCEPTS - 5C'S & 5E'S **4 Hours**

Personality Concepts: Definition - Types of Personality- Personality development activities- Factors affecting personality development - Tools to improve personality- Steps to a dynamic personality-5 C's and 5 E's.

Time Management: Importance –Training.

LEADERSHIP TRAITS & SELF DEVELOPMENT **4 Hours**

Leadership Traits – Carrying oneself - Factors of leadership – Principles of leadership.

Self Development: Importance – Techniques to development oneself– How to develop oneself?–Ten Commandments of self-development– Self-control technique for teenagers.

Training: Method of Self-Control.

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SPIRITUAL DEVELOPMENT THROUGH KAYA KALPA YOGA **4 Hours**

Spiritual development: Need – Development through Kaya Kalpa - Responsibility of men and women – Need of morality.

KayaKalpa yoga: Aim - kayakalpa philosophy - Importance of kayakalpa training.

Training: Kaya Kalpa Yoga.

EXERCISE & MEDITATION **10 Hours**

Simplified Physical Exercise & Meditation Practice.

TOTAL: 30 HOURS

REFERENCES:

1. Dr. A. Chandra Mohan, "***Leadership and Management***", Himalaya Publication House,
2. Robert W. Bly, ***"Make Every Second Count",*** Career Press, Incorporated, 2010.
3. Vethathiri's Maharishi's, ***"Manavalakalai part 1,2&3"*** 11th edition, The World Community Service Centre, Vethathiri Publications,1994.
4. Vethathiri Maharishi's, ***"Rejuvenating Life Force and Mind"*** – paper-III for M.A. Yoga for Human Excellence" 3rd edition, The World Community Service Centre, Vethathiri Publications, 2010.
5. Vethathiri's Maharishi's, ***"Yoga for Modern Age",*** The World Community Service Centre, Vethathiri Publications, 2009.
6. Vethathiri's Maharishi's, ***"Genetic Centre",*** The World Community Service Centre, Vethathiri Publications,2003.
7. Swami Vivekananda, "***Selections from the complete works"*** 23th edition , The Ramakirshna Mission Institute of Culture, 2007
8. Vethathiri's Maharishi's, ***"Mind"*** The World Community Service Centre, Vethathiri Publications, 1999.
9. Vethathiri's Maharishi's, ***"Kudumpa Amaithi"*** The World Community Service Centre, Vethathiri Publications, 2001.
10. Russell Kelfer, "***Self Control***", Tyndale House Publishers, 1985.
11. Swami Vivekananda, "***Karma Yoga"*** 39th edition, The Ramakirshna Mission Institute of Culture, 2008.

COURSE OUTCOMES

After successful completion of this course, the students should be able to:

CO1: Behaves as a responsible family member.
CO2: Develop skills for personality improvement.
CO3: Acquire practical knowledge on self-control technique for teenagers.
CO4: Identify the significant of Genetic Centre for the Soul functional base operation.

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