

Avinashilingam Institute for Home Science and Higher Education for Women

Coimbatore 641 043, Tamil Nadu, India

**I BE Biomedical Instrumentation Engineering
Scheme of Instruction & Examination**

(For the students admitted from 2014-15 onwards)

Part	Subject Code	Name of paper/component	Periods of instruction/week		Scheme of examination				
			Theory	Tutorial/Practical	Duration of exam	CI A	CE	Total	Credit
First Semester									
I		Language							
	14BESH01	Professional English	3	0/1	3	20	80	100	3
II		Basic Sciences							
	14BESM01	Engineering Mathematics-I	4	1/0	3	20	80	100	4
	14BESS01	Engineering Physics	3	-	3	20	80	100	3
	14BESS02	Engineering Chemistry	3	-	3	20	80	100	3
	14BESS03	Physics and Chemistry Practicals-I	-	0/3	3	100	-	100	2
III		Interdisciplinary Courses							
	14BEBI01	Basic Civil and Mechanical Engineering (CE)	4	-	3	20	80	100	3
	14BEBI02	Medical Biochemistry (S&H)	4	-	3	20	80	100	3
	14BEBI03	Engineering Practices Practicals (Civil, FPPT, S&H, ECE and EEE)	-	0/3	3	50	50	100	1
Second Semester									
I		Language							
	14BESH02	Professional English Practices	2	0/3	3	50	50	100	2
II		Basic Sciences							
	14BESM02	Engineering Mathematics- II	4	1/0	3	20	80	100	4
	14BESS04	Materials Science	3	-	3	20	80	100	3
	14BESS07	Applied Chemistry	3	-	3	20	80	100	3
	14BESS09	Physics and Chemistry Practicals-II	-	0/3	3	50	50	100	2
III		Core Courses							
	14BEBC01	Engineering Graphics	2	0/3	3	40	60	100	4
III		Interdisciplinary Courses							
	14BEBI04	Problem Solving Using C (CSE)	4	-	3	20	80	100	3
	14BEBI05	C Programming Practicals (CSE)	-	0/3	3	50	50	100	1
	14BEBI06	Electron Devices and Applications (BMIE)	4	-	3	20	80	100	3

Avinashilingam Institute for Home Science and Higher Education for Women

Coimbatore 641 043, Tamil Nadu, India

I BE Civil Engineering

Scheme of Instruction & Examination

(For the students admitted from 2014-15 onwards)

Part	Subject Code	Name of paper/component	Periods of instruction/week		Scheme of examination				
			Theory	Tutorial/Practical	Duration of exam	CI A	C E	Total	Credit
First Semester									
I		Language							
	14BESH01	Professional English	3	0/1	3	20	80	100	3
II		Basic Sciences							
	14BESM01	Engineering Mathematics-I	4	1/0	3	20	80	100	4
	14BESS01	Engineering Physics	3	-	3	20	80	100	3
	14BESS02	Engineering Chemistry	3	-	3	20	80	100	3
	14BESS03	Physics and Chemistry Practicals-I	-	0/3	3	100	-	100	2
III		Core Course							
	14BEVC01	Engineering Graphics	2	0/3	3	40	60	100	4
III		Interdisciplinary Courses							
	14BEVI01	Basic Electrical and Electronics and Engineering (EEE)	4	-	3	20	80	100	3
	14BEVI02	Elements of Town Planning and Architecture (Civil)	4	-	3	20	80	100	3
	14BEVI03	Engineering Practices Practicals (Civil, FPPT, S&H, ECE and EEE)	-	0/3	3	50	50	100	1
Second Semester									
I		Language							
	14BESH02	Professional English Practices	2	0/3	3	50	50	100	2
II		Basic Sciences							
	14BESM02	Engineering Mathematics- II	4	1/0	3	20	80	100	4
	14BESS04	Materials Science	3	-	3	20	80	100	3
	14BESS08	Chemistry for Civil Engineers	3	-	3	20	80	100	3
	14BESS09	Physics and Chemistry Practicals-II	-	0/3	3	50	50	100	2
III		Core Courses							
	14BEVC02	Engineering Mechanics	3	1/0	3	20	80	100	4
III		Interdisciplinary Courses							
	14BEVI04	Principles of Management (Civil)	4	-	3	20	80	100	3
	14BEVI05	Problem Solving Using C (CSE)	4	-	3	20	80	100	3
	14BEVI06	C Programming Practicals (CSE)	-	0/3	3	50	50	100	1

Avinashilingam Institute for Home Science and Higher Education for Women

Coimbatore 641 043, Tamil Nadu, India

I BE Computer Science and Engineering

Scheme of Instruction & Examination

(For the students admitted from 2014-15 onwards)

Part	Subject Code	Name of paper/component	Periods of instruction/week		Scheme of examination				
			Theory	Tutorial/Practical	Duration of exam	CI A	CE	Total	Credit
First Semester									
I		Language							
	14BESH01	Professional English	3	0/1	3	20	80	100	3
II		Basic Sciences							
	14BESM01	Engineering Mathematics-I	4	1/0	3	20	80	100	4
	14BESS01	Engineering Physics	3	-	3	20	80	100	3
	14BESS02	Engineering Chemistry - I	3	-	3	20	80	100	3
	14BESS03	Physics and Chemistry Practicals-I	-	0/3	3	100	-	100	2
III		Interdisciplinary Courses							
	14BEOI01	Electronic Devices and Circuits (ECE)	4	-	3	20	80	100	3
	14BEOI02	Electric Circuits and Systems (EEE)	4	-	3	20	80	100	3
	14BEOI03	Electronic Devices and Circuits Practicals (ECE)	-	0/3	3	50	50	100	1
Second Semester									
I		Language							
	14BESH02	Professional English Practices	2	0/3	3	50	50	100	2
II		Basic Sciences							
	14BESM02	Engineering Mathematics- II	4	1/0	3	20	80	100	4
	14BESS04	Materials Science	3	-	3	20	80	100	3
	14BESS05	Engineering Chemistry - II	3	-	3	20	80	100	3
	14BESS09	Physics and Chemistry Practicals-II	-	0/3	3	50	50	100	2
III		Core Courses							
	14BEOC01	Engineering Graphics (Civil)	2	0/3	3	40	60	100	4
III		Interdisciplinary Courses							
	14BEOI04	Digital Electronics (ECE)	4	-	3	20	80	100	3
	14BEOI05	Environmental Engineering (CSE)	4	-	3	20	80	100	3
	14BEOI06	Digital Electronics Practicals (ECE)	-	0/3	3	50	50	100	1

Avinashilingam Institute for Home Science and Higher Education for Women

Coimbatore 641 043, Tamil Nadu, India

I BE Electronics and Communication Engineering

Scheme of Instruction & Examination

(For the students admitted from 2014-15 onwards)

Part	Subject Code	Name of paper/component	Periods of instruction/week		Scheme of examination				
			Theory	Tutorial/Practical	Duration of exam	CI A	C E	Total	Credit
First Semester									
I		Language							
	14BESH01	Professional English	3	0/1	3	20	80	100	3
II		Basic Sciences							
	14BESM01	Engineering Mathematics-I	4	1/0	3	20	80	100	4
	14BESS01	Engineering Physics	3	-	3	20	80	100	3
	14BESS02	Engineering Chemistry - I	3	-	3	20	80	100	3
	14BESS03	Physics and Chemistry Practicals-I	-	0/3	3	100	-	100	2
III		Interdisciplinary Courses							
	14BELI01	Electrical Engineering Principles (EEE)	3	2/0	3	20	80	100	3
	14BELI02	Basic Civil and Mechanical Engineering (Civil)	4	-	3	20	80	100	3
	14BELI03	Engineering Practices Practicals (Civil, FPPT, S&H, ECE and EEE)	-	0/3	3	50	50	100	1
		Second Semester							
I		Language							
	14BESH02	Professional English Practices	2	0/3	3	50	50	100	2
II		Basic Sciences							
	14BESM02	Engineering Mathematics- II	4	1/0	3	20	80	100	4
	14BESS04	Materials Science	3	-	3	20	80	100	3
	14BESS05	Engineering Chemistry - II	3	-	3	20	80	100	3
	14BESS09	Physics and Chemistry Practicals-II	-	0/3	3	50	50	100	2
III		Core Courses							
	14BELC01	Engineering Graphics	2	0/3	3	40	60	100	4
III		Interdisciplinary Courses							
	14BELI04	Data Structures (ECE)	3	1/0	3	20	80	100	3
	14BELI05	Problem Solving Using C (CSE)	4	-	3	20	80	100	3
	14BELI06	C Programming Practicals (CSE)	-	0/3	3	50	50	100	1

Avinashilingam Institute for Home Science and Higher Education for Women

Coimbatore 641 043, Tamil Nadu, India

**I BE Electrical and Electronics Engineering
Scheme of Instruction & Examination**

(For the students admitted from 2014-15 onwards)

Part	Subject Code	Name of paper/component	Periods of instruction/week		Scheme of examination				
			Theory	Tutorial/Practical	Duration of exam	CI A	C E	Total	Credit
First Semester									
I		Language							
	14BESH01	Professional English	3	0/1	3	20	80	100	3
II		Basic Sciences							
	14BESM01	Engineering Mathematics-I	4	1/0	3	20	80	100	4
	14BESS01	Engineering Physics	3	-	3	20	80	100	3
	14BESS02	Engineering Chemistry - I	3	-	3	20	80	100	3
	14BESS03	Physics and Chemistry Practicals-I	-	0/3	3	100	-	100	2
III		Interdisciplinary Courses							
	14BEEI01	Professional Ethics (ECE)	4	-	3	20	80	100	3
	14BEEI02	Basic Civil and Mechanical Engineering (Civil)	4	-	3	20	80	100	3
	14BEEI03	Engineering Practices Practicals (Civil, FPPT, S&H, ECE and EEE)	-	0/3	3	50	50	100	1
Second Semester									
I		Language							
	14BESH02	Professional English Practices	2	0/3	3	50	50	100	2
II		Basic Sciences							
	14BESM02	Engineering Mathematics- II	4	1/0	3	20	80	100	4
	14BESS04	Materials Science	3	-	3	20	80	100	3
	14BESS05	Engineering Chemistry - II	3	-	3	20	80	100	3
	14BESS09	Physics and Chemistry Practicals-II	-	0/3	3	50	50	100	2
III		Core Courses							
	14BEEC01	Engineering Graphics	2	0/3	3	40	60	100	4
III		Interdisciplinary Courses							
	14BEEI04	Communication Engineering (ECE)	4	-	3	20	80	100	3
	14BEEI05	Problem Solving Using C (CSE)	4	-	3	20	80	100	3
	14BEEI06	C Programming Practicals (CSE)	-	0/3	3	50	50	100	1

Avinashilingam Institute for Home Science and Higher Education for Women

Coimbatore 641 043, Tamil Nadu, India

I BE Food Processing and Preservation Technology

Scheme of Instruction & Examination

(For the students admitted from 2014-15 onwards)

Part	Subject Code	Name of paper/component	Periods of instruction/week		Scheme of examination				
			Theory	Tutorial/Practical	Duration of exam	CI A	C E	Total	Credit
First Semester									
I		Language							
	14BESH01	Professional English	3	0/1	3	20	80	100	3
II		Basic Sciences							
	14BESM01	Engineering Mathematics-I	4	1/0	3	20	80	100	4
	14BESS01	Engineering Physics	3	-	3	20	80	100	3
	14BESS02	Engineering Chemistry - I	3	-	3	20	80	100	3
	14BESS03	Physics and Chemistry Practicals-I	-	0/3	3	100	-	100	2
III		Core Courses							
	14BEFC01	Engineering Practices Practicals (Civil, FPPT, S&H, ECE and EEE)	-	0/3	3	50	50	100	1
III		Interdisciplinary Courses							
	14BEFI01	Problem Solving Using C (CSE)	4	-	3	20	80	100	3
	14BEFI02	C Programming Practicals (CSE)	-	0/3	3	50	50	100	2
Second Semester									
I		Language							
	14BESH02	Professional English Practices	2	0/3	3	50	50	100	2
II		Basic Sciences							
	14BESM02	Engineering Mathematics- II	4	1/0	3	20	80	100	4
	14BESS04	Materials Science	3	-	3	20	80	100	3
	14BESS0	Chemistry of Food Materials	3	-	3	20	80	100	3
	14BESS09	Physics and Chemistry Practicals-II	-	0/3	3	50	50	100	2
III		Core Courses							
	14BEFC02	Introduction to Food Science and Technology	4	-	3	20	80	100	4
	14BEFC03	Food Science Practicals	-	0/3	3	50	50	100	2
	14BEFC04	Engineering Graphics	2	0/3	3	40	60	100	4
III		Interdisciplinary Courses							
	14BEFI03	Basic Civil and Mechanical Engineering (Civil)	4	-	3	20	80	100	3

Avinashilingam Institute for Home Science and Higher Education for Women

Coimbatore 641 043, Tamil Nadu, India

**I BE Information Technology
Scheme of Instruction & Examination**

(For the students admitted from 2014-15 onwards)

Part	Subject Code	Name of paper/component	Periods of instruction/week		Scheme of examination				
			Theory	Tutorial/Practical	Duration of exam	CI A	CE	Total	Credit
First Semester									
I		Language							
	14BESH01	Professional English	3	0/1	3	20	80	100	3
II		Basic Sciences							
	14BESM01	Engineering Mathematics-I	4	1/0	3	20	80	100	4
	14BESS01	Engineering Physics	3	-	3	20	80	100	3
	14BESS02	Engineering Chemistry - I	3	-	3	20	80	100	3
	14BESS03	Physics and Chemistry Practicals-I	-	0/3	3	100	-	100	2
III		Interdisciplinary Courses							
	14BEII01	Electric Circuits and Systems (EEE)	4	-	3	20	80	100	3
	14BEII02	Electrical Circuits and Electron Devices (ECE)	4	-	3	20	80	100	3
	14BEII03	Engineering Practices Practicals (Civil, FPPT, S&H, ECE and EEE)	-	0/3	3	50	50	100	1
Second Semester									
I		Language							
	14BESH02	Professional English Practices	2	0/3	3	50	50	100	2
II		Basic Sciences							
	14BESM02	Engineering Mathematics- II	4	1/0	3	20	80	100	4
	14BESS04	Materials Science	3	-	3	20	80	100	3
	14BESS05	Engineering Chemistry - II	3	-	3	20	80	100	3
	14BESS09	Physics and Chemistry Practicals-II	-	0/3	3	50	50	100	2
III		Core Courses							
	14BEIC01	Engineering Graphics (Civil)	2	0/3	3	40	60	100	4
III		Interdisciplinary Courses							
	14BEII04	Digital Electronics (ECE)	4	-	3	20	80	100	3
	14BEII05	Environmental Engineering and Disaster Management (IT)	3	-	3	20	80	100	3
	14BEII06	Digital Electronics Practicals (ECE)	-	0/3	3	50	50	100	1

Avinashilingam Institute for Home Science and Higher Education for Women

Coimbatore 641 043, Tamil Nadu, India

I BE Printing Technology

Scheme of Instruction & Examination

(For the students admitted from 2014-15 onwards)

Part	Subject Code	Name of paper/component	Periods of instruction/week		Scheme of examination				
			Theory	Tutorial/Practical	Duration of exam	CI A	C E	Total	Credit
First Semester									
I		Language							
	14BESH01	Professional English	3	0/1	3	20	80	100	3
II		Basic Sciences							
	14BESM01	Engineering Mathematics-I	4	1/0	3	20	80	100	4
	14BESS01	Engineering Physics	3	-	3	20	80	100	3
	14BESS02	Engineering Chemistry - I	3	-	3	20	80	100	3
	14BESS03	Physics and Chemistry Practicals-I	-	0/3	3	100	-	100	2
III		Interdisciplinary Courses							
	14BEPI01	TQM for Graphic Art Industry (PT)	4	1/0	3	20	80	100	3
	14BEPI02	Basic Civil and Mechanical Engineering (Civil and FPPT)	4	-	3	20	80	100	3
	14BEPI03	Engineering Practices Practicals (Civil, FPPT, S&H, ECE and EEE)	-	0/3	3	50	50	100	1
Second Semester									
I		Language							
	14BESH02	Professional English Practices	2	0/3	3	50	50	100	2
II		Basic Sciences							
	14BESM02	Engineering Mathematics- II	4	1/0	3	20	80	100	4
	14BESS04	Materials Science	3	-	3	20	80	100	3
	14BESS05	Engineering Chemistry - II	3	-	3	20	80	100	3
	14BESS09	Physics and Chemistry Practicals-II	-	0/3	3	50	50	100	2
III		Core Courses							
	14BEPC01	Engineering Graphics	2	0/3	3	40	60	100	4
III		Interdisciplinary Courses							
	14BEPI04	Management Information System (PT)	3	-	3	20	80	100	3
	14BEPI05	Problem Solving Using C (CSE)	4	-	3	20	80	100	3
	14BEPI06	C Programming Practicals (CSE)	-	0/3	3	50	50	100	1

Professional English

Semester I
14BESH01

Periods of instruction/week:4
No.of credits : 3

Objectives:

1. To train learners in organized academic and professional writing.
2. To develop aural competency and oral fluency of learners.
3. To help learners achieve proficiency in the effective use of language in various authentic career, related situations.

Unit I Language through Reading

12

Skimming, scanning, predicting the content of a given passage, identifying the lexical and contextual meanings, note making (guided & unguided) cloze reading, drawing inferences, separating facts from opinions.

Unit II Focus on Language

12

Word formation with prefixes and suffixes, synonyms and antonyms, Impersonal passive voice, Tenses, use of prepositions, 'if clauses', use of words as nouns and verbs, subject, verb, agreement, Editing, British and American English.

Unit III Language through Practice

12

Resume writing, writing instructions and recommendations, preparing checklists, classifying the data, analyzing / interpreting the data, Paragraph writing, Formal letters, writing to officials (leave letter, seeking permission for practical training, asking for Certificates, testimonials), unseen comprehension, creative writing, Framing Agendas, Minutes of the meeting.

Unit IV Oral Practice(Lab Sessions)

12

Pronunciation Techniques:

Phonetics, Stress, Primary and Secondary stress, Neutral Accent, Rising and Falling Tone, Voice Modulation.

Public Speaking Skills:

Compeering, Introducing a guest to the audience, Welcome address, Proposing a vote of thanks.

Unit V (Lab Sessions)

12

Justifying and Summarizing Skills:

Emphasizing a point, discussing the pros and cons, focusing on reasons, Summarizing briefly and concisely

Designing an Advertisement:

Interpreting advertisements, Slogan/caption writing, creating one's own advertisement for a product.

Total Periods: 60

Textbook:

Aysha Viswamohan (2008). English for Technical Communication. Tata McGraw-Hill Publishing Co Ltd, New Delhi.

References:

1. *Dr. S. Sumant, English for Engineers (2005).* Tata McGraw Hill Publishing Co Ltd, New Delhi.
2. *M. Ashref Rizvi (2005). Effective Technical Communication.* Tata McGraw Hill Publishing Co Ltd, New Delhi.
3. *Raymond V Lesikar & Marie E. Flatley (2005). Basic Business Communication.* Tenth Ed. Tata McGraw Hill Publishing Co. Ltd, New Delhi.

Engineering Mathematics – I

Semester I
14 BESM01

Periods of Instruction/ week: 5
No.of credits : 4

Objectives:

To develop skills in diagonalising a matrix, applications of differential calculus and differential equations in various engineering fields.

Unit I Matrices

15

Characteristic equation, Eigen values and eigenvectors of a real matrix, Properties of eigen values and eigenvectors, Cayley – Hamilton theorem (without proof), Orthogonal matrices, Reduction of quadratic form to canonical form by orthogonal transformation.

Unit II Geometrical Applications of Differential Calculus

15

Curvature, Cartesian and polar co-ordinates, Centre and radius of curvature, Circle of curvature, Involutives and evolutes, Envelopes of family of curves.

Unit III Ordinary Differential Equations

15

Simultaneous first order linear equations with constant coefficients, Linear equations of second order with constant and variable coefficients, Homogeneous equations of Euler type, Method of variation of parameters.

Unit IV Application of Differential Equation

15

Solution of ODE related to electric circuits, motion of a particle in a resisting medium and simple harmonic motion.

Unit V Functions of Several Variables

15

Functions of two variables, Partial derivatives, Total differential, Maxima & minima, Constrained maxima and minima, Lagrange's Multiplier method, Jacobians.

Total periods - 75

Text Book :

T.Veerarajan (2011). Engineering Mathematics for semester I and II. updated second Edition. Tata McGraw,Hill Publishing Co.Ltd, New Delhi.

References :

1. **Dr. M. Chandrasekaran, Dr. T. Arunachalam ,Dr. Gnanambal Ilango(2006). Engineering Mathematics – I.** Volume I, First Edition. Inder Pub, Coimbatore.
2. **E.Kreyszig (2001). Advanced Engineering Mathematics.** Eighth Edition. John Wiley and Sons (Asia) Ltd, Singapore.
3. **B.S.Grewal (2001). Higher Engineering Mathematics.** Thirty Sixth Edition. Khanna Publishers, Delhi.
4. **P.Kandaswamy K.Thilagavath and K.Gunavathy (2000). Engineering Mathematics.** Volume I. Fourth Revised Edition. S. Chand & Co, New Delhi.

Engineering Physics

Semester I
14BESS01

Periods of instruction/week :3
No.of credits :3

Objectives:

The aims of the course are

- 1.To impart fundamental knowledge in various topics of Physics and Engineering applications.
- 2.To enable the students to correlate the principles with applications.
- 3.To enhance theoretical ideas and introduce modern technological aspects.

Unit I Ultrasonics

9

Introduction, magnetostriction effect, Production of ultrasonic waves: Magnetostriction generator, Inverse piezoelectric effect, Piezoelectric generator, Detection of ultrasonic waves, Properties, Cavitations, soldering and cleaning, Non Destructive Testing, Pulse echo system, Through transmission and resonance system, Medical application: Ultrasonic Doppler Blood flow meter.

Unit II Laser technology

9

Principle of spontaneous emission and stimulated emission, Population inversion, Pumping mechanism, Types of lasers, He,Ne, CO₂, Nd,YAG and Semiconductor laser, Applications: welding, heat treatment, cutting, holography, Medical applications (for eye and cancer treatment) .

Unit III Fiber optics

9

Principle, Modes of propagation, Crucible,crucible technique, Classification based on materials, refractive index profile, Light sources for fiber optics, Detectors, Fiber optical communication links, Applications: Temperature and displacement sensors,Endoscope

Unit IV Quantum physics

9

Introduction to Quantum theory, Dual nature of matter and radiation, de Broglie wave length, Uncertainty principle, Schrödinger's equation, Particle in a box, Electron microscope, Scanning electron microscope (SEM), Scanning Transmission Electron Microscope (STEM).

Unit V Vacuum science

9

Importance of vacuum in industries, Schematic diagram of a vacuum system, Pumping speed and throughput, Types of pumps, Working principle and construction of Rotary pump, Diffusion pump , Measurement of vacuum using pirani and penning Gauges.

Total Periods: 45

Textbook:

G.Senthil Kumar (2011). Engineering Physics. Chennai Revised Edition. VRP Publisher.

References:

1. ***M.Arumugam (2007). Engineering Physics.*** Anuradha Agencies, Kumbakonam.
2. ***S.Jaya Kumar (2007). Engineering Physics.*** R.K.Publishers, Coimbatore.
3. ***P.K.Palanisamy (2006). Engineering Physics.*** Scitech Publications, Chennai.

Engineering Chemistry/ Engineering Chemistry - I

Semester I
14BESS02

Periods of Instruction/week:3
No.of credits:3

Objectives:

- 1.To develop a sound knowledge of theoretical and modern technological aspects of Chemistry.
- 2.To apply the knowledge of Chemical principles in Engineering.

Unit I Water Technology

10

Characteristics, alkalinity, types of alkalinity and determination, hardness, types and estimation by EDTA method (problems); Domestic water treatment, disinfection methods (Chlorination, ozonation, UV treatment), Boiler feed water, requirements, disadvantages of using hard water in boilers, internal conditioning (phosphate, calgon and carbonate conditioning methods), external conditioning, demineralization process, desalination and reverse osmosis.

Unit II Polymers and Composites

8

Polymers, definition, polymerization, types, addition and condensation polymerization, free radical polymerization mechanism, Plastics, classification, preparation, properties and uses of PVC, Teflon, polycarbonate, polyurethane, nylon,6, 6, PET, rubber, vulcanization of rubber, synthetic rubbers, butyl rubber, SBR, composites, definition, types polymer matrix composites, FRP only.

Unit III Non-Conventional Energy Sources and Storage Devices

8

Nuclear energy, fission and fusion reactions and light water nuclear reactor for power generation (block diagram only), breeder reactor, solar energy conversion , solar cells, fuel cells, hydrogen, oxygen fuel cell, batteries, alkaline batteries, lead, acid, nickel, cadmium and lithium batteries.

Unit IV Surface Chemistry and Catalysis

9

Adsorption, types of Adsorption, Adsorption of gases on solids, Adsorption isotherm, Freundlich, Langmuir isotherms, Adsorption of solutes from solutions, applications, role of adsorption in catalytic reactions, ion exchange adsorption, basic principles in adsorption chromatography, catalysis, classification, characteristics of catalysts, auto catalysis, enzyme catalysis, Michaelis , Menton equation, acid base catalysis.

Unit V Spectroscopy

10

Electromagnetic spectrum, absorption of radiation, electronic transition, vibrational transition, rotational transition, intensities of spectral lines, Beer, Lambert's Law, colorimetric analysis, estimation of concentration of a solution by colorimetry, flame photometry, theory, instrument (block diagram only) and application, visible & UV spectroscopy, principles, instrument (block diagram only) and simple applications,IR spectroscopy, simple applications only.

Total Periods : 45

Textbooks:

1. *Jain P.C and Renuka Jain (2002). Engineering Chemistry.* Dhanpat Rai Pub,Co.(P)Ltd, New Delhi.
2. *Combined Authors (2011). Chemistry for Engineers.* First edition. ISBN 978,81,265,1988,0. Wiley, India.

References:

1. **B.S.Bhal, G.D.Tuli, and Arun Bhal. *Essentials of Physical Chemistry*. S.Chand & Company Ltd, New Delhi.**
2. **S.S.Dara (3). *A Textbook of Engineering Chemistry*. S.Chand& Company Ltd, New Delhi.**
3. **B.R.Puri, L.R.Sharma and Madan S.Pathania (2000). *Principles of Physical Chemistry*. Shoban Lal Nagin Chand & Co, Jalandhar.**
4. **P.C.Jain and Renuka Jain (2001). *Physical Chemistry for Engineers*. Dhanpat Rai & Sons, New Delhi.**

Physics and Chemistry Practicals-I

Semester I
14BESS03

Periods of Instruction/week:3
No.of credits:2

Part A -Physics

Objectives:

- To impart experimental skills on potentially important experiments needed for Engineering.
- To inculcate technical skill in handling of instruments and the calculation methods.

List of Experiments

1. LASER- Particle size determination-Grating
2. Ultrasonic interferometer-Determination of compressibility of a liquid
3. Fiber optics – Numerical aperture (It should be moved to I semester from II semester)
4. Melde's apparatus- Frequency of the vibrator
5. Spectrometer- wavelength determination –Grating
6. Torsional Pendulum-Rigidity modulus of wire and moment of inertia of disc

Part B –Chemistry

Objectives:

- To impart hands on experience in the use of analytical equipments
- Should be conversant with the theoretical principles and experimental procedures for quantitative estimation.

List of Experiments

1. Determination of total hardness, temporary & permanent hardness of water by EDTA method.
2. Determination of DO content by Winkler's method.
3. Determination of alkalinity in a water sample.
4. Determination of chloride content of water sample by argentometric method.
5. Colorimetry
6. UV Spectrophotometry
7. Flame photometry

A minimum of FIVE experiments each in Physics and Chemistry shall be offered. Laboratory classes on alternate weeks for Physics and Chemistry.

Total Periods: 45

Basic Civil and Mechanical Engineering

Semester I

14BEBI01/14BELI02/14BEEI02/14BEPI02

Periods of Instruction/week:4

No.of credits:3

Objectives:

- 1.The Subject introduce the characters of common constructive materials such as stones, bricks etc... and basic methods of measuring the field.
2. To provide knowledge about IC engines, boilers and power plant.

A- Civil Engineering

Unit I Surveying and Civil Engineering Materials 12

Surveying: Objects, types, classification, principles, measurements of distances, angles, leveling, determination of areas, illustrative examples.

Civil Engineering Materials: Bricks, stones, sand, cement, concrete, steel section.

Unit II Building Components and Structures 12

Foundations: Types, Bearing capacity, Requirement of good foundations.

Superstructure: Brick masonry, stone masonry, beams, columns, lintels, roofing, flooring, plastering, Mechanics, Internal and external forces, stress, strain, elasticity, Types of Bridges and Dams, Basics of Interior Design and Landscaping.

B-Mechanical Engineering

Unit III Power Plant Engineering 12

Introduction, Classification of Power Plants, Working principle of steam, Gas, Diesel, Hydroelectric and Nuclear Power plants, Merits and Demerits, Pumps and turbines, working principle of Reciprocating pumps (single acting and double acting), Centrifugal Pump.

Unit IV I C Engines 12

Internal combustion engines as automobile power plant, Working principle of Petrol and Diesel Engines, Four stroke and two stroke cycles, Comparison of four stroke and two stroke engines , Boiler used in power plant.

Unit V Refrigeration and Air Conditioning System 12

Terminology of Refrigeration and Air Conditioning. Principle of vapour compression and absorption system, Layout of typical domestic refrigerator, Window and Split room Air conditioner.

Total Periods : 60

References:

1. *G.Shanmugam and M.S.Palanichamy (1996).Basic Civil and Mechanical Engineering.* Tata Mc Graw Hill Publishing Co, New Delhi.
2. *S.Ramamrutham (1999).Basic Civil Engineering.* Dhanpat Rai Publishing Co. (P) Ltd.
3. *S.Seetharaman (2005). Basic Civil Engineering.* Anurdha Agencies.
4. *K.Venugopal and V.Prahu Raja (2000). Basic Mechanical Engineering.* Anuradha Publishers, Kumbakonam.
5. *S.R.J.Shantha Kumar (2000). Basic Mechanical Engineering.* Hi, tech Publications, Mayiladuthurai.

Medical Biochemistry

Semester I
14BEB I02

Period of Instruction/week:4
No.of Credits: 3

Objective:

To study the biochemical reactions in human body and selected analytical techniques for assessment of the biochemical parameters of diagnostic importance.

Outcome:

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

- 1.Understand important biomolecules and their functions in human body
- 2.Analyze the levels of clinically important biochemical parameters in normal and diseased state
- 3.Become familiar with analytical and diagnostic tools

Unit I Introduction To Biochemistry : Chemistry And Significance Of Biomolecules 12
Carbohydrates, Definition, Classification, Biomedical importance, Diabetes, Blood sugar analysis, Glucose Tolerance Tests, Lipids, Definition, Classification, Essential fatty acids and cholesterol and their clinical significance.

Unit II Proteins and its Separation 12
Proteins, Composition, Physical and Chemical properties, Classification, Enzymes and Isoenzymes, Biomedical importance, Separation and Purification of proteins by HPLC, Ion Exchange and Column Chromatography, Electrophoretic Separation of Plasma Proteins.

Unit III Vitamins 12
Vitamins, Classification, Functions and Deficiency symptoms of fat soluble and water soluble vitamins, Hypervitaminosis of A,D,E and K, Radio isotopes in medicine, Diagnostic and therapeutic uses.

Unit IV Clinical Diagnostics 12
Liver function tests, Renal function tests, Gastric function tests, Thyroid function test, Blood and Urine analysis, Urolithiasis, Regulation of Water and Electrolyte balance, Acid -Base balance, Normal Values of Biochemical Parameters.

Unit V Analytical Techniques 12
Principle, Instrumentation and Applications of Spectrophotometry-with special reference to UV visible, Atomic Absorption and Flame Emission Spectrophotometry, Fluorimetry, Ultra centrifugation and Immunoassays(RIA and ELISA), Automation in Clinical Laboratory.

Total Periods: 60

Text Book:

1.Donold Voet, Judith, G.voet and charlotte (2006). w. pratt. Fundamentals of Biochemistry- Life at the Molecular Level. John Wiley and Sons, Inc. (Asia).

Reference Books:

- 1.***Ambika Shanmugam (2012). Fundamentals of Biochemistry for Medical Students. 7th edition. Lippincott Williams and Wilkins.*
- 2.***Ananthanarayanan (2009). Ananthanarayanan and Paniker's Text Book of Microbiology. 8th edition. Universities Press.*
- 3.***Carl a. Burtis.,tietz (2012). text book of clinical chemistry and molecular diagnostics. 5th Edition.,Saunders .*
- 4.***Harold Varley (2006) .Practical Clinical Biochemistry. 6th Edition.CBS.*

Engineering Practices Practicals
(A.Civil and Electrical B.Mechanical and Electronics)

Semester I

**14BEBI03/14BEVI03/14BELI03/14BEEI03/
14BEFC01/14BEII03/14BEPI03**

Periods of Instruction/week:3

No.of credits:1

Objectives :

- 1.To cater to the needs of the practical application and to help in learning Engineering skills in Civil, Mechanical, Electrical and Electronics
- 2.To provide adequate knowledge in the Plumbing & Pipe fitting,Wiring, Joints type, Simple turning & Drilling and soldering simple electronics components.

(Group-A Civil & Electrical)

1. Civil Engineering Practice

Unit I Plumbing

Study of pipeline joints, its location and functions: valves, taps, couplings, unions, reducers, elbows in household fittings.

- i) Study of pipe connections requirements for pumps and turbines.
- ii)Preparation of plumbing line sketches for water supply and sewage works.

Hands-on-exercise:

- i)Basic pipe connections, Mixed pipe material connection, Pipe connections with different joining components.
- ii)Demonstration of plumbing requirements of high,rise buildings.

Unit II Carpentry

Carpentry: Study of Carpentry tools, Floor construction, Wall system and stair way construction

- i)**Types of joints:** Study of the joints in roofs, doors, windows and furniture. Straight,angle jointing, Edge,to,edge jointing, End,to,end jointing.

Unit III Trusses

Trusses: Study of trusses common industrial trusses using models.Study of joints in door panels,wooden furniture.

- i) Study about the framing members.
- ii) Study about the roof covering materials.

1. Electrical Engineering Practice

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 regulartor, emergency lamp.

(Group-B Mechanical & Electronics)

2.Mechanical Engineering Practice

Welding

Arc welding of butt joints, lap joints, tee joints

Gas welding practice

Basic Machining

Simple turning, and drilling operations

Machine assembly practice

Study of the following: centrifugal pump, and air,conditioners

Demonstration on

Foundry operation like mould preparation for dumbles, step cone pulley

Electronic Engineering Practice

1.Soldering simple electronic circuits

Assembling electronic components on a small PCB and testing

2. V-I Characteristics of PN Junction Diode

3. V-I Characteristics of Zener Diode

4.Study of telephone, FM radio, Low,voltage power supplies

Total periods: 45

Examination Pattern

The Examination is to be conducted for both groups A & B, allotting 1 ½ for each group.

Engineering Graphics

Semester I
14BEVC01

Periods of Instruction/week:5
No.of credits:4

Objectives:

- 1.To develop in students graphic skill for communication of concepts, ideas
- 2.Design of engineering products and expose them to existing national standards related to technical drawings.

Unit I Scales, Projection of Points, Lines and Surfaces 16

Introduction to letter practice, scales used in engineering practice and representative fraction, the principles, construction of plain diagonal vernier scale, orthographic projection of points, Projection of straight lines located in the first quadrant only, determination of true length and true inclination, Projections of plane surfaces like polygonal lamina and circular lamina, located in, first quadrant only.

Unit II Projection of Simple Solids 12

Projection of simple solids like prism, pyramid, and cylinder, Drawing views when the axis of the solid is inclined to one Reference plane.

Unit III Sectioning of Solids 15

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

Unit IV Isometric, Perspective Projection and free-hand sketching 16

Isometric projections, Isometric scale, Isometric views of simple solids, 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 .perspective projections of solids.

Unit V Auto CAD 16

Introduction to drafting software, creation of simple geometric bodies using basic primitives (line, arc, circle) and editing the drawings. Practice in drawing orthographic projection.

Total Periods: 75

Textbooks:

- 1.K.Venugopal (2006). *Engineering Graphics*. New Age International (P) Limited.
- 2.K.V.Natarajan (2008). *Engineering drawing and graphics*. Private Publisher, 17th Ed. Chennai.
- 3.N.D. Bhatt (2003). *Engineering Drawing*. Charotar Publishing House. 46th Edition.

References:

- 1.M.S.Kumar (2007). *Engineering Graphics*. D.D.Publications, ninth edition.Chennai.
- 2.J.Warren Luzadder and John.M.Duff (2007). *Fundamentals of Engineering Drawing*. PrenticeHall of India Pvt., Ltd, Eleventh edition.
- 3.K.R.Gopalakrishnan (2007). *Engineering Drawing (Vol.I & II)*. Subhass Publications.
- 4.Bertoline and Wiebe (2007). *Fundamentals of graphics Communication*. Third edition. McGrawhill.
- 5.A.Dhananjay Jolh (2008). *Engineering Drawing with an introduction to AutoCAD*. Tata McGraw Hill Publishing Company Limited.

Basic Electrical and Electronics Engineering

Semester I
14 BEVI01

Periods of Instruction/week: 4
No.of credits:3

Objectives:

1.To understand the concepts of electrical and electronic devices.

Unit I Electrical Circuits & Measurements 12

Ohm's Law, Kirchoff's Laws, Steady State Solution of DC Circuits, Introduction to AC Circuits, Waveforms and RMS Value, Power and Power factor, Single Phase and Three Phase Balanced Circuits. Operating Principles of Moving Coil and Moving Iron Instruments (Ammeters and Voltmeters), Dynamometer type Watt meters and Energy meters.

Unit II Electrical Machines 12

Construction, Principle of Operation, Basic Equations and Applications of DC Generators, DC Motors, Single Phase Transformer, single phase induction Motor.

Unit III Semiconductor Devices and Applications 12

Characteristics of PN Junction Diode, Zener Effect, Zener Diode and its Characteristics, Half wave and Full wave Rectifiers, Voltage Regulation. Bipolar Junction Transistor, CB, CE, CC Configurations and Characteristics, Elementary Treatment of Small Signal Amplifier.

Unit IV Digital Electronics 12

Binary Number System, Logic Gates, Boolean Algebra, Half and Full Adders, Flip,Flops, Registers and Counters, A/D and D/A Conversion (single concepts)

Unit V Fundamentals of Communication Engineering 12

Types of Signals: Analog and Digital Signals, Modulation and Demodulation: Principles of Amplitude and Frequency Modulations. Communication Systems: Radio, TV, Fax, Microwave, Satellite and Optical Fibre (Block Diagram Approach only).

Total Periods: 60

Textbooks:

1. *V.N. Mittle (1990). Basic Electrical Engineering.* Tata McGraw Hill Edition. New Delhi.
2. *R.S. Sedha (2006). Applied Electronics.* S. Chand & Co.

References:

- 1.*R.Muthusubramanian,S.Salivahanan and K.A.Muraleedharan (2006). Basic Electrical Electronics and Computer Engineering.*Tata McGraw Hill. Second Edition.
- 2.*T.K.Nagsarkar and M.S.Sukhija (2005). Basics of Electrical Engineering.* Oxford Press.
- 3.*V.K.Mehta (1994). Principles of Electronics.* S.Chand & Company Ltd.
- 4.*Mahmood Nahvi and A.Joseph Edminister (2002) .Electric Circuits* Schaum Outline Series. McGraw Hill.
- 5.*N.Premkumar (2003). Basic Electrical Engineering.* Anuradha Publishers.

Elements of Town Planning and Architecture

Semester II

Instruction Periods/ week: 4

14BEV I02

No. of credits: 3

Objectives

- To study on the orientation of the building for energy efficiency
- To study the general rules and regulations for building approval

Unit I Town Planning **12**

History of evolution of towns, Town and environment, Climate, humidity, wind and radiation, Surveys and Data collection, Residential neighbourhoods, Industrial areas, Public Buildings, Housing and Slum clearance.

Unit II Building Rules and Guidelines **12**

General, Zoning regulations, Regulations regarding layouts or subdivisions, Building regulations, Rules for special types of buildings, Floor space index, minimum plot size and building front age, Open spaces, Minimum standard dimensions of building elements, Provision for lighting and ventilation, Provision for means of access.

Unit III Basic Elements of Architecture **12**

Introduction of Architecture, Definition, Mass and Space visual emotional effects of geometric forms and their derivatives, The sphere, the cube, the pyramid, the cylinder and cone, The aesthetic qualities of Architecture, Proportion, scale, balance, symmetry, rhythm and axis, contrast in form, Harmony.

Unit IV Principles of Orientation and Planning of Buildings **12**

General, Factors affecting orientation, Sun, Wind, Rain, Orientation criteria for Indian conditions, Principles governing the theory of planning, Planning of Residential buildings.

Unit V Elements of Interior Design **12**

General, Decorative Materials, Cement Bonded Board (BISON PANEL), water proof cement paint, Industrial glazing and Roofing, unit masonry, plaster and dry wall, Wall surface materials, Effect of colour on architecture, Home furnishing, Plans in rooms.

Total Periods: 60

TextBooks:

1. *S.C.Rangwala.(2013). Elements of Town Planning* Charotar Publishing House, Anand, India.
2. *Ching, Frank (Francis D.K.) (2007). Architecture: Form, Space & Order*, Van Nostrand Reinhold, New York.

References:

1. *V.S.Pramar.(1990). Design fundamentals and architecture.* Somaiya Publications Pvt. Ltd. Mumbai, India
2. *Hiraskar, G.K. (2013) Fundamentals in town planning.* Dhanpat Rai & Sons, Delhi.
3. *Francis D.K.Ching. (2012). Interior design –Illustrated.* John Wiley & Sons Inc, New York
4. *William rupp with friedmann. (1989). Construction materials for Interior design.* Watson-Guptill

Electric Circuits and Systems

Semester I
14BEOI02/14BEII01

Periods of Instruction/week: 4
No. of credits: 3

Objectives

- To enable the students to solve the basic electrical network.
- To understand the working of electrical machines
- To get introduced to the various power generation systems.

Unit I Basics of Circuit Analysis

12

Kirchoff's Laws, series and parallel DC circuits, AC Circuits, Mesh and Nodal Analysis using Matrix method.

Unit II Network Theorems and Resonance Circuits

12

Thevenin's and Norton's theorems, Superposition theorem, Compensation theorem, Reciprocity theorem, Maximum power transfer theorem, series and parallel resonance, Quality factor and Bandwidth.

Unit III Transient Analysis

12

Networks elements, Transient response of RL, RC and RLC circuits to DC excitation, Three phase power, Power measurement by two wattmeter method.

Unit IV Electrical Machines and Transformers

12

Construction and operating principle of DC machines, Construction and operating principle of transformer, applications.

Unit V Introduction to Power System

12

Importance of electrical energy, generation of electrical energy, sources of energy, steam power station, hydro electric power station, nuclear power station, electric supply system, typical AC power supply scheme, substations, tariff.

Total Periods: 60

Text books:

1. *Sudhakar, A., Shyam Mohan S. Palli, "Circuits and Networks"*, Tata Mc Graw Hill Publishing Company Limited, Second Edition, ISBN 0-07-048295-0, 2006.
2. *Cotton.H, "Electrical Technology"*, 7th edition, New Delhi, CBS Publishers, 1984.Reprint 2005.
3. *Uppal S L, "Electrical Power Systems"*, Khanna Publishers, 2009

Reference books:

1. *Joseph Edminister and Mahmood Nahri, "Electric Circuits"*, Thrid Edition, Tata Mc Graw Hill, New Delhi, 2005.
2. *V.K.Mehta,Rohit Mehta,"Pinciples of Electrical Machines"*, S.Chand & company.Ltd-2005.

Electronic Devices and Circuits Practicals

Semester I
14BEOI03

Periods of Instruction/week:3
No.of credits:1

Objectives :

1. To make students familiar with characteristics of various solid state electronic devices.
2. To study the behaviour of simple electronic circuits involving discrete components and ICs.

List of Experiments:

- 1.PN Junction Diode Characteristics
- 2.Zener Diode Characteristics
- 3.Half Wave and Full Wave Rectifier
- 4.Zener Regulator
- 5.CE Transistor Characteristics
- 6.UJT Characteristics
- 7.FET Characteristics
- 8.SCR Characteristics
- 9.Frequency Response of CE, CB, and CC Amplifier with fixed bias and self,bias
- 10.Applications of 555 Timer
- 11.Verification of Kirchoff's Laws and Network Theorem
- 12.Applications of Operational Amplifier
- 13.RC and LC Oscillators
- 14.Coupled Circuits

Total Periods: 45

Electrical Engineering Principles

Semester I
14BELI01

Periods of Instruction/Week: 5
No.of Credits : 3

Objective

- To understand the construction, operation and characteristics of DC, AC and special machines

Unit I	DC Machines	12
---------------	--------------------	-----------

Essential features of construction ,EMF and torque equation , Characteristics of different types of DC generators and motors, Applications , Starting, braking and speed control characteristics of DC motors, Testing of DC machines(Practical) .

Unit II	Transformers	12
----------------	---------------------	-----------

Principle , Types and general features of construction of single phase transformer, Equivalent circuit and efficiency , Autotransformers.

Unit III	Synchronous Machines	12
-----------------	-----------------------------	-----------

Types and general constructional features , EMF equation , Regulation, Starting methods , Applications of Synchronous machines.

Unit IV	Induction Machines	12
----------------	---------------------------	-----------

Constructional features of three phase induction motor , equivalent circuit , Slip - torque characteristics , Starting, braking and speed control methods, Applications, Testing of AC machines(Practical) .

Unit V	Special Machines	12
---------------	-------------------------	-----------

Principle of operation of tacho generators , Servo Motors , Reluctance and Hysteresis motors, Stepper motors , Linear induction motors , Applications.

Total Periods: 60

Text books:

1.Mehta.V.K(2010).Principles Of Electrical Machines, S.Chand and Company Ltd.

2.Vincent Del Toro (2007).Electrical Engineering Fundamentals, Pearson Education, Second Edition

Reference books:

1.Theraja.B.L(2002).A Text Book Of Electrical Technology Ac – Dc Machines, S.Chand and Co.Ltd., New Delhi.

2.Say. M.G(2002).Alternating Current Machine, CBS Publisher.

3.Ashfaq Husain(2007).Electric Machines, Dhanpat Rai & Co.

Professional Ethics

Semester I
14BEEI01

Instruction Periods / week : 4
No of credits: 3

Objectives

- To recognize and attempt to reconcile societal and individual human needs with responsibility for physical, natural, and cultural systems.
- To promote and develop policies, plans, activities and projects that achieve complementary and mutual support between natural and man-made, and present and future components of the physical, natural and cultural environment.

Unit I Human Values

12

Morals, Values and Ethics ,Integrity ,Work Ethic ,Service Learning ,Civic Virtue Respect for Others ,Living Peacefully , Caring ,Sharing , Honesty , Courage ,Valuing Time ,Co,operation ,Commitment ,Empathy ,Self,Confidence ,Character ,Spirituality.

Unit II Engineering Ethics

12

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 ,uses of ethical theories.

Unit III Engineering As Social Experimentation

12

Engineering as experimentation ,engineers as responsible experimenters ,codes of ethics ,a balanced outlook on law ,the challenger case study

Unit IV Safety Responsibilities And Rights

12

Safety and risk ,assessment of safety and risk ,risk benefit analysis and reducing risk , the Three mile Island and Chernobyl case studies. collegiality and loyalty ,respect for authority ,collective bargaining ,confidentiality ,conflicts of interest ,occupational crime ,professional rights ,employee rights ,Intellectual Property Rights (IPR) ,discrimination.

Unit V Global Issues

12

Multinational corporations ,Environmental ethics ,computer ethics ,weapons development ,engineers as managers,consulting engineers,engineers as expert witnesses and advisors ,moral leadership, sample code of Ethics (Specific to a particular Engineering Discipline).

Total Periods:60

References :

- 1 Mike Martin and Roland Schinzinger(1996). "Ethics in engineering", McGraw Hill, New York.**
- 2 Govindarajan M, Natarajan S, Senthil Kumar V. S(2004).“ Engineering Ethics”, Prentice Hall of India, New Delhi,**
- 3 Charles D. Fleddermann(2004). "Engineering Ethics", Pearson Education/ Prentice Hall,New Jersey.(Indian Reprint now available)**
- 4 Charles E Harris, Michael S. Protchard and Michael J Rabins(2000). “ Engineering Ethics – Concepts and Cases”,Wadsworth Thompson Learning, United States.(Indian Reprint now available)**
- 5 John R Boatright(2003). “ Ethics and the Conduct of Business”, Pearson Education, NewDelhi.**
- 6 Edmund G Seebauer and Robert L Barry, “ Fundamentals of Ethics for Scientists.**

Problem Solving Using C

Semester I
14BEFI01

Periods of Instruction/week:4
No.of credits:3

Objectives:

1. To understand the fundamentals of Computer and Information Technology
2. To understand what an algorithm is and to know how to express solution of a problem using an algorithm
3. To learn the concept and coding using C language.

Unit I Basics of Computer and Problem Solving Methodology 12

Digital Computer Fundamentals–Block diagram of computer–Components of a computer system–Applications of Computers–Hardware and Software definitions–Categories of Software–Bootting–Installing and uninstalling Software–Software piracy–Software terminologies–Information Technology Basics–History of Internet–Internet Tools -Problem solving Techniques–Program–Program development cycle–Algorithm – Flow chart – Pseudo Code – Program control structures – Types and generation of programming languages – Development of algorithms for simple problems.

Unit II Basic Elements of C and Decision Making 12

Introduction to C – Lexical elements of C – Operators and expressions – Operator precedence and associativity of operators – Input and Output Functions – Simple computational problems - Control statements – Branching, looping, nested control structures, switch, break, continue, go to statements – Problems using control structures.

Unit III Functions, Program Structures and Arrays 12

Prototypes and Functions–Declaring, defining and accessing functions–Parameter passing methods – Recursion–Storage classes–auto, extern, static and register–Library functions–Programs using Functions - defining and processing arrays–Passing arrays to functions–Multi-dimensional arrays–Strings and basic operations on strings–Enumerated data types–Programs using simple sorting, searching and merging of arrays

Unit IV Pointers 12

Pointer concept–Declaration–Accessing variable through pointer–Initializing pointer variable–Pointers and Functions–Pointers and Arrays–Pointers and Structures–Example programs using pointers with function, arrays and structures–Command line arguments – Dynamic memory allocation–Operations on pointers

Unit V Structures, Union and File Handling 12

Structures–User defined data types–Union–Nested structure, passing structures to functions – Self referential structures - File pointer–High level File operations–Opening and closing of file–Creating, Processing and Updation on files–Simple file handling programs–Low level Programming –Additional Features of C.

Total Periods: 60

Text Books:

1. *Jeri R. Hanly and Elliot B. Koffman, “Problem Solving and Program Design in C”,* Fourth Edition, Pearson Education India, 2005.
2. *Balagurusamy.E, “Programming in ANSI C”,* Tata McGraw Hill, Third Edition 2006.

Reference:

1. *Byron Gottfried, “Programming with C”,* II Edition, (Indian Adapted Edition), TMH publications, 2006.

C Programming Practicals

**Semester I
14BEFI02**

**Periods of Instruction/week:3
No.of credits:2**

Objective:

1. To provide hands on training on C language.

List of Exercises

C Programs:

1. Programs using conditional operator and if statement
2. Programs using SwitchCase Statements
3. Programs using for, while and do while loops
4. Programs using Arrays
5. Programs using Functions and Recursive Functions
6. Programs using Structures
7. Programs using Pointers
8. Programs using File Operations

Total Periods: 45

Electrical Circuits and Electron Devices

Semester I
14BEII02

Periods of Instruction/ Week:4
No.of credits:3

Objectives:

1. To provide knowledge about the active and passive components of Electric Circuits to students.
2. To provide the students an insight analysis of D.C circuits using various theorems.
3. To provide basic concepts of Electron devices.

Unit I Circuit Analysis **12**

Introduction to basic Components of Electric Circuits: Resistor, Inductor, Capacitor, current, voltage, power, Voltage and Current Sources, Resistors in Series and Parallel, Delta, Wye Conversion, Voltage and Current Division rule, Ohm's law, Kirchoff's voltage and current law, Nodal Analysis and Mesh Analysis.

Unit II Network Theorems **12**

Circuit Analysis Techniques: Superposition theorem, Thevenin and Norton Equivalent Circuits, Maximum Power Transfer theorem, Reciprocity theorem.

Unit III Semi, Conductor Theory & PN Junction Diodes **12**

Classical theory & energy band theory, charge densities in semiconductors, mobility & conductivity, drift & diffusion currents.

PN junction Diode, VI characteristics & current components, diode resistances & capacitances, effect of temperature on diode characteristics, model of a diode, clippers, clampers & Voltage multipliers.

Unit IV Bipolar Junction Transistors **12**

Current components, input & output characteristics of a transistor in CE, CB, CC configurations & regions of operation, current gain in CE, CB, CC configurations, h parameter model, different types of biasing & applications, stability analysis.

Unit V FET & UJT **12**

Construction & characteristics of JFET, parameters of JFET, MOSFET, depletion & enhancement modes, FET in CS, CD, CG Configurations, equivalent circuit of FET at low frequencies, FET model at high frequencies, FET biasing techniques, Construction, theory of operation & characteristics of UJT & PUT.

Total Periods: 60

Textbooks:

1. *William Hayt, Jack Kemmerly, Steven Durbin (2007). Engineering Circuit Analysis.* Tata McGraw Hill Edition.
2. *Robert Boylestad (1998). Electronic Device & Circuit Theory.* Ninth Edition. PHI.

References:

1. *M.Arumugam, N.Premkumaran (2008). Electric Circuit Theory.* Khanna Publisher.
2. *A.David Bell (1998). Electronic Devices & Circuit.* PHI.

TQM for Graphic Art Industry

Semester I

Instruction Periods/ week: 5 (4+1)

14 BEPI01

No. of credits: 3

Objective

- To introduce the management methods used to enhance quality and productivity in printing organizations

Unit 1 TQM in Graphic Industry

15

Introduction of TQM, definition of quality and related terms, basic elements of TQM, characteristics, advantages, holistic features, application of quality concept, quality principles

Unit II TQM Models

TQM models -Kaizen, European Quality Awards, Malcom Baldrige Award, Indian Quality Awards, Motorola 6 sigma concepts, zero defect quality, quality circles, quality function deployment, quality by design. Quality gurus and their contribution, Deming, Crosby, Taguchi, Ishikawa, Juran.

Unit III Statistical Process Control for TQM in Graphic Arts Industry

Statistical process control (SPC), purpose of SPC, SPC tools -process maps, Ishikawa diagrams, check sheets, Pareto analysis, histograms, run charts, control charts, correlation diagrams, monitoring variables –X/R-chart, monitoring print attributes-P-chart, counting defects-C-chart.,

Unit IV Process Re-engineering and Sustaining Total quality

15

Process re-engineering, principles, requirements, steps in re-engineering, re-engineering and TQM, benefits and limitations. Corporate culture, designing total quality culture, best practices, self-assessment for total quality, total quality environment, implementation and sustaining quality.

Unit V Certification Process

15

Fine tenets of continual process improvement, supplier certification process. Internal and external suppliers and customers, analysis of present supplier and preferred supplier situation, desired outcomes of the supplier certification process, services offered by the supplier, ISO:9000 (2000), ISO:14000, QS:8000 standards.

Total Periods: 75

References:

1. *Herschel L.A. (1995) "Implementing TQM in Graphic Art"* Pira and GATF, Pittsburg
2. *Arora S.C. (1996) "Applying ISO 9000 Quality Management System"* International Trade Centre, Switzerland
3. *Bhat K.S. (2005) "Total Quality Management"* Himalaya Publishing House, Bangalore

Professional English Practices

Semester II
14BESH02

Periods of instruction/week:5
No.of credits: 2

Objectives:

1. To make learners acquire listening and speaking skills in both formal and informal contexts.
2. To make them acquire language skills at their own pace by using language lab components.
3. To make the students communicate their thoughts, opinions and ideas freely and naturally.

Exercises:

I	Group Discussion	10
	GD strategies, initiating a discussion, persuasion skills, body language, ways of interrupting (non-offending), summarizing and concluding.	
II	Interview Skills	10
	Introducing oneself, listing one's aspirations and goals, systematically expressing one's achievement (academic as well as professional), listening keenly and gently manipulating the interviewer, e mail etiquette.	
III	Presentation Skills	11
	Business and technical presentation, technical articles (for journals and conferences), business etiquette.	
IV	Active Listening Practices	11
	Speech decoding, comprehending, types of conversation, formal and informal, listening to academic, business and technical speeches.	
V	Online Grammar Exercises	11
	Editing the passage, cloze exercises, jumbled sentences, tag question, usage of tenses, phrasal verbs, sentence patterns.	
VI	Vocabulary Enrichment	11
	Word formation, technical jargon, words often confused and misused, homophones.	
VII	Book Review	11
	Reading inspiring articles, inferring meanings, reading between the lines and beyond the lines, understanding implicit and explicit ideas.	

Total periods.: 75

References :

1. *Aysha Viswamohan (2008). English for Technical Communication.* Tata McGraw Hill Publishing Co. Ltd, New Delhi.
2. *M. Ashref Rizvi (2005). Effective Technical Communication.* Tata McGraw Hill Publishing Co. Ltd, New Delhi.
3. *Dr.K.Devadoss and P.Malathi (2008). Customize Yourself to Corporate Life.* Inder Publications,Coimbatore.

Engineering Mathematics – II

Semester II
14BESM02

Periods of Instruction/ week: 5
No. of credits: 4

Objectives:

1. To enhance knowledge in multiple integrals, Laplace transform and its applications in Engineering.
2. To understand the concepts of complex integration and contour integration.

Unit I Multiple Integrals

15

Double integration, Cartesian and polar coordinates, Change of order of integration, Area as a double integral, Triple integration in Cartesian coordinates, Change of variables between Cartesian and polar coordinates

Unit II Vector Calculus

15

Gradient, divergence and curl, Line, surface and volume integrals, Green's, Gauss divergence and Stoke's theorems (without proof), Verification of the above theorems and evaluation of integrals using them.

Unit III Laplace Transform

15

Laplace Transform, Sufficient conditions, Transforms of elementary functions, Basic properties, Inverse transforms, Derivatives and integrals of transforms, Transforms of derivatives and integrals, Convolution theorem, Transform of periodic functions, Application to solution of linear ordinary differential equations up to second order with constant coefficients.

Unit IV Analytic Functions

15

Function of a complex variable, Analytic function, Necessary conditions, Cauchy – Riemann equations in Cartesian coordinates, Sufficient conditions (Proof not included), Properties of analytic function, Determination of harmonic conjugate by Milne – Thomson method,

Conformal mapping, $w = z + a$, az , $\frac{1}{z}$

Unit V Complex Integration

15

Statement and application of Cauchy's theorem and Cauchy's integral formula, Taylor and Laurent expansion, Singularities, Classification, Residues, Cauchy's residue theorem, Contour integration, Unit circle and semi-circular contours (excluding poles on real axis).

Total periods - 75

Text Book :

T.Veerarajan (2002). Engineering Mathematics (for First Year). Second Edition. Tata McGraw–Hill Pub. Co. Ltd, New Delhi.

References:

1. **B.S.Grewal (2001). Higher Engineering Mathematics.** Thirty Sixth Edition. Khanna Publishers, Delhi.
2. **P.Kandaswamy, K.Thilagavathi & K.Gunavathi (2003). Engineering Mathematics.** Fifth Edition & sixth Edition .S.Chand & Company Ltd, New Delhi.

Materials Science

Semester II
14BESS04

Periods of Instruction/week:3
No.of credits: 3

Objectives:

- 1.To understand the properties and applications of different engineering materials.
- 2.To learn the concept of smart and nanomaterials.
- 3.To impart knowledge on advance materials and devices.

Unit I Semiconducting materials

9

Elemental and compound semiconductors, Intrinsic and Extrinsic semiconductors, Properties, Materials preparation: Zone refining technique, Carrier concentration in intrinsic and extrinsic semiconductors, Hall effect, Hall coefficient in extrinsic semiconductors, Experimental determination of Hall coefficient, Application of Hall effect, Semiconductor devices, Solar Cells, LDR and LCD.

Unit II Magnetic materials

9

Classification and Properties, Domain theory of ferromagnetism, Hysteresis, Hard and soft magnetic materials, Ferrites, Applications, Devices: Magneto optical recording, storage of magnetic data, Floppy and magnetic disc drives, Magnetic bubble memory.

Unit III Dielectric and superconducting materials

9

Study of various polarization, Effect of temperature and frequency on dielectric constant, Breakdown mechanisms, Applications, Ferroelectric energy converter, Types of superconductors, Properties, BCS theory (qualitative), High T_c superconductors, Application of superconductors, SQUID, Cryotron, Magnetic levitation.

Unit IV Nano and smart materials

9

Dimensionality and size dependence, Fabrication methods: Top,down process (ball milling and lithographic process) and Bottom,up process (Physical vapour deposition and sol,gel method), Shape Memory alloys (SMA), Characteristics, Properties of NiTi alloys.

Unit V Nano structures and devices

9

Carbon nanotubes (CNT), Properties, Fabrication (Laser ablation, Electric arc discharge), Applications, Organic light emitting diode (OLED), CNT field effect transistor, fuel cells, Basic Principles of Quantum well, Quantum dot Laser.

Total Periods: 45

References:

1. *S.Jaya Kumar (2008). Materials Science.* R.K.Publishers, Coimbatore.
2. *P.K.Palanisamy (2003). Materials Science.* 2nd Edition. Scitech Publication, Chennai.
3. *M.Arumugam (2003). Material Science.* 4th Edition. Anuradha Agencies, Kumbakonam.

Applied Chemistry

Semester II
14BESS07

Periods of Instruction/week:3
No.of credits:3

Objectives:

- 1.To impart knowledge on the fundamental chemical principles.
- 2.To make students competent in application of chemical concepts in the field of bio medical engineering.

Unit I Photo Chemistry

9

Photochemical reactions, laws of photochemistry, Grotthus- Draper law, Stark- Einstein law, quantum efficiency, photochemical decomposition of HI and HBr, quantum yield determination, chemical actinometer, energy transfer in Photochemical reactions, photosensitization and quenching (example, Photosynthesis in plants), chemiluminescence, photo physical processes, fluorescence, phosphorescence, photo inhibitors, radiation chemistry, radiolysis, principles, radiation dosimetry (units, Fricke dosimeter)

Unit II Corrosion and its Inhibition

9

Corrosion, causes of corrosion, principles of chemical corrosion, Pilling- Bedworth rule, principles of electrochemical corrosion, factors influencing corrosion, types of corrosion, galvanic corrosion, differential aeration corrosion, stress corrosion, soil corrosion, pitting corrosion, water line corrosion, corrosion control, cathodic protection, sacrificial anode, selection of materials and proper designing, corrosion inhibitors, anodic and cathodic inhibitors, protective coatings, electroplating, electroless plating.

Unit III Phase Rule

9

Phase rule, introduction, phase, component, degrees of freedom, phase diagrams, applications of phase rule to one component systems and two component systems, phase transformations, basic ideas.

Unit IV Basic Bio Materials

9

Bulk properties, Surface properties and characterization, polymers, silicone biomaterials, medical fibres and biotextiles, smart polymers, bioresorbable and bioerodible materials, natural materials, metals and ceramics, physicochemical surface modification.

Unit V Biocompatibility Concepts

9

Introduction to biocompatibility, cell material interaction, types of materials, toxic, inert, bioactive, long term effects of materials within the body, cell response. chemical and biochemical degradation of polymers, degradation of metals and ceramics, calcification of biomaterials.

Total hours : 45

Textbooks:

1. **P.C. Jain and Renuka Jain (2002). Engineering Chemistry.** Dhanpat Rai Pub,Co.(P)Ltd., New Delhi.
2. **B.R.Puri C.R.Sharma and Madan S.Pathania (2000). Principles of Physical Chemistry.** Shoban Lal Nagin Chand & Co.

References:

1. **Jonathan Black (2006). *Biological Performance of Materials Fundamentals of Biocompatibility*. 4th Edn. CRC Press.**
2. **B.S.Bahl G.D.Tuli and Arun Bhal (2003). *Essentials of Physical Chemistry*. S.Chan & Co.Ltd, New Delhi.**
3. **Buddy D Ratner, Allan S Hoffman (2004). *Biomaterials Science An introduction to materials in Medicine*. Elsevier academic press.**
4. **D.John Enderle, M.Susan Blanchard, D.Joseph Bronzino (2005). *Introduction to Biomedical Engineering*. 2nd Edn. Elsevier Academic Press.**

Chemistry for Civil Engineers

Semester II

14BESS08

Periods of Instruction/week:3

No.of credits:3

Objectives:

- 1.To provide students with a background in important concepts and principles of Chemistry.
- 2.To use the knowledge of Chemistry in describing and solving real technological problems.

Unit I Corrosion and its Control

9

Chemical corrosion,Pilling,Bedworth rule,electrochemical corrosion,principle,different types,galvanic corrosion,differential aeration corrosion,factors influencing corrosion,corrosion control,selection of materials and proper designing,sacrificial anode and impressed cathodic current methods,corrosion inhibitors.

Unit II Pollution

9

Air pollution, sources, classification of air pollutants,gaseous pollutants, oxides of carbon,sulphur, nitrogen, hydrocarbons,photochemical smog,particulates,green house effect, ozone depletion,prevention of air pollution, Soil pollution,sources and effects, solid waste management

Unit III Water Pollution

9

Physical, chemical biological characteristics of water, sources of water pollution,physico chemical analysis of water,colour,turbidity,total solids, BOD,COD,waste water treatment,sewage treatment and disposal, primary, secondary, tertiary treatment

Unit IV Nano Materials

9

Size dependence of properties, electrical, optical, magnetic and mechanical properties. synthesis of nanomaterials, traditional chemical routes, colloid nanoparticles, self assembly of colloid nanoparticles, eletrodeposition, electrostatic self assembly, Langmuir- Blodgett (LB) technique, organic films in conventional microelectronics and optoelectronic devices. electrical and electrochemical optical sensors, vapour sensors, biosensors.

Unit V Engineering Materials

9

Refractory, classification, acidic, basic, and neutral refractory, Properties (refractoriness, refractoriness under load, dimensional stability, porosity, thermal spalling), manufacture of alumina, magnesite and zirconia bricks, abrasives, natural and synthetic abrasives,quartz,corundum,emery,garnet,diamond,silicon carbide and boron carbide. Lubricants,properties, viscosity index, flash and fire points, cloud and pour points, oilyness, aniline point, solid lubricants, graphite and molybdenum sulphide, semisolid lubricants,greases.

Total Periods : 45

Textbooks:

- 1.*P.C Jain & Monika Jain (2002). Engineering Chemistry.* Dhanpat Rai Publishing Co Ltd, New Delhi.
- 2.*T.Ramachandran, H.Venkataraman, P.N.Magudeswaran (2008). Chemistry for Engineers.* Vijay Nicole Imprints Private Ltd, Chennai.

References:

- 1.*P.C.Jain .And Renuka Jain (2001). Physical chemistry for engineers.* Dhanpat Rai Publishing Co Ltd, New Delhi.
- 2.*Lloyd A.Munro (2009). Chemistry in Engineering.* Prentice Hall Inc., London.
- 3.*B.K.Sharma (2002). Industrial Chemistry.* Goel Publishing house, Meerut.

Engineering Chemistry-II

Semester II
14BESS05

Periods of Instruction/week:3
No. of credits: 3

Objectives:

- 1.To provide students with a background in important concepts and principles of Chemistry.
- 2.To use the knowledge of Chemistry in describing and solving real technological problems.

Unit I Electrochemistry

9 Electrochemical cells, reversible and irreversible cells, EMF, measurement of emf, electrode potential, Nernst equation (problem), Reference electrodes, Standard Hydrogen electrode, Calomel electrode, Ion selective electrode, glass electrode and measurement of pH, electrochemical series, significance, potentiometric titrations (redox, Fe^{2+} vs dichromate and precipitation, Ag^+ vs Cl^-) and conductometric titration (acid, base, HCl vs NaOH).

Unit II Corrosion and its control

9

Chemical corrosion, Pilling-Bedworth rule, electrochemical corrosion, principle, different types, galvanic corrosion, differential aeration corrosion, factors influencing corrosion, corrosion control, selection of materials and proper designing, sacrificial anode and impressed current cathodic protection methods, corrosion inhibitors.

Unit III Polymers for Electronics

9

Conducting polymers, conducting mechanism, applications, Organic light emitting diodes, sensors, circuit Boards, rechargeable batteries, photoconductive polymers, applications, thermo sensitive polymers, applications.

Unit IV Nano Materials

9

Size dependence of properties, electrical, optical, magnetic and mechanical properties, synthesis of nanomaterials, traditional chemical routes, colloid nanoparticles, self assembly of colloid nanoparticles, electrodeposition, electrostatic self assembly, Langmuir-Blodgett (LB) technique, organic films in conventional microelectronics and optoelectronic devices, electrical and electrochemical optical sensors, vapour sensors, biosensors.

Unit V Engineering Materials

9

Refractory, classification, acidic, basic, and neutral refractory, Properties (refractoriness, refractoriness under load, dimensional stability, porosity, thermal spalling), manufacture of alumina, magnesite and zirconia bricks, Abrasives, natural and synthetic abrasives, quartz, corundum, emery, garnet, diamond, silicon carbide and boron carbide. Lubricants, properties, viscosity index, flash and fire points, cloud and pour points, oiliness, aniline point, solid lubricants, graphite and molybdenum sulphide, semisolid lubricants, greases.

Total Periods: 45

Textbooks:

1. *P.C Jain & Monika Jain (2002). Engineering Chemistry.* Dhanpat Rai Publishing Co Ltd, New Delhi.
2. *T.Ramachandran, H.Venkataraman, P.N.Magudeswaran (2008). Chemistry for Engineers.* Vijay Nicole Imprints Private Ltd, 29, Chennai.

References:

1. P.C. *Jain And Renuka Jain (2001). Physical chemistry for engineers.* Dhanpat Rai Publishing Co Ltd, New Delhi.
2. *Organic and Inorganic Nanostructures (2005).* Alexei Nabok. Artech House, Inc.
3. B.K. *Sharma (2002). Industrial Chemistry.* Goel Publishing house, Meerut.
4. S.S. *Dara (2006). A Textbook of Engineering Chemistry.* S.Chand & Company Ltd, New Delhi.

Chemistry of Food Materials

Semester II
14BESS06

Periods of Instruction/week:3
No.of credits: 3

Objectives:

1. To impart basic knowledge of Chemistry and Biochemistry in food components and their functional properties.
2. To provide an overview of the basic principle, procedures and applications for food analysis in laboratory experiments.

Unit I Carbohydrates and Proteins 9

Carbohydrates, definition, classification symmetry, isomerism, formulation of monosaccharides, reactions of glycosidic OH group and alcoholic OH group and CHO/CO groups, applications, Proteins, general structure, electrochemical properties, configuration, chemical bonds involved in protein structure, colour reactions for amino acids, applications

Unit II Lipids and Nucleic Acids 9

Lipids, definition, components of lipids, classification, changes during food processing, rancidity, characterization, acid number, saponification number, iodine number, RM number, biological functions Nucleic acids, definition, components, phosphoric acid, sugar and nitrogenous base, DNA, double helical structure, RNA types, informosome

Unit III Food Additives 9

Preservatives, sweeteners, food colours, flavouring agents, emulsifying agents, stabilizing and antifoaming agents, Antioxidants, classification and basic concepts.

Unit IV Instrumentation for Analysis 9

Chromatography, principles and techniques of paper, gas, ion exchange and high performance chromatography, fluorimetry, spectrophotometry, pHmetry, densitometry NMR applications.

Unit V Pollution Control in Food Industries 9

Industrial waste treatment methods, treatment of dairy wastes, sugar industry wastes, meat and poultry wastes, distillery and brewery wastes, starch industry wastes.

Total Periods : 45

Textbooks:

1. **R.Fennema Owen (2007). Food chemistry.** Marchel Dekhar, New York.
2. **Lillian Hoagland Meyer (2004). Food Chemistry.** CBS Publishers & Distributors, New Delhi.

References:

1. *Clair N.Sawyer and Perry L.McCarty (2003). Chemistry for Environmental Engineering & Science.* McGraw Hill Book Company.
2. *S.N.Mahindru (2004.) Food Additives* Tata Mc Graw Hill Publishing Company Limited, New Delhi.
3. *Rao,M.N. and A.K.Datta (2008). Waste Water treatment.* Oxford and IBH Publishing Co. Pvt. Ltd.
4. *Suzanne Nielson (2002). Introduction to chemical analysis of foods.* Jones and Barlett Publishers, London.

Physics and Chemistry Practicals-II

Semester II
14BESS09

Periods of Instruction/week:3
No.of credits:2

Part A -Physics

Objectives:

1. To impart experimental skills on potentially important experiments needed for engineering.
2. To inculcate technical skill in handling of instruments and the calculation methods.

List of Experiments

1. LCR Bridge –Dielectric constant of solids
2. Four Probe Apparatus-Bandgap of a semiconductor
3. Hysteresis loop- Hysteresis curve tracer
4. Solar cell-V-I characteristics
5. Hall effect-carrier concentration
6. LASER- wavelength determination-Grating

Part B-Chemistry

pH

- 1.To find out the strength of given hydrochloric acid by sodium hydroxide.

Conductometry

1. Conductometric titration of mixture of acids.
2. Conductometric precipitation titration using BaCl_2 , Na_2SO_4 .

Potentiometry

- 1.Redox titration, Iron Vs. dichromate.

Viscometry

- 1.Determination of molecular weight of a polymer.

Total Periods: 45

Engineering Graphics

Semester II

Periods of Instruction/week:5

14BEBC01/14BEOC01/14BELC01/

14BEEC01/14BEFC04/14BEIC01/14BEPC01

No.of credits:4

Objectives:

- 1.To develop in students graphic skill for communication of concepts, ideas
- 2.Design of engineering products and expose them to existing national standards related to technical drawings.

Unit I Scales, Projection of Points, Lines and Surfaces

16

Introduction

to letter practice, scales used in engineering practice and representative fraction, the principles, construction of plain diagonal vernier scale, orthographic projection of points, Projection of straight lines located in the first quadrant only, determination of true length and true inclination, Projections of plane surfaces like polygonal lamina and circular lamina, located in, first quadrant only.

Unit II Projection of Simple Solids

12

Projection of simple solids like prism, pyramid, and cylinder, Drawing views when the axis of the solid is inclined to one Reference plane.

Unit III Sectioning of Solids

15

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

Unit IV Isometric, Perspective Projection and free-hand sketching

16

Isometric projections, Isometric scale, Isometric views of simple solids, 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 .perspective projections of solids.

Unit V Auto CAD

16

Introduction to drafting software, creation of simple geometric bodies using basic primitives (line, arc, circle) and editing the drawings. Practice in drawing orthographic projection.

Total Periods: 75

Textbooks:

- 1.K.Venugopal (2006). *Engineering Graphics*. New Age International (P) Limited.
- 2.K.V.Natarajan (2008). *Engineering drawing and graphics*. Private Publisher, 17th Ed. Chennai.
- 3.N.D. Bhatt (2003). *Engineering Drawing*. Charotar Publishing House. 46th Edition.

References:

- 1.M.S.Kumar (2007). *Engineering Graphics*. D.D.Publications, ninth edition.Chennai.
- 2.J.Warren Luzadder and John.M.Duff (2007). *Fundamentals of Engineering Drawing*. PrenticeHall of India Pvt., Ltd, Eleventh edition.
- 3.K.R.Gopalakrishnan (2007). *Engineering Drawing (Vol.I & II)*. Subhass Publications.
- 4.Bertoline and Wiebe (2007). *Fundamentals of graphics Communication*. Third edition. McGrawhill.
- 5.A.Dhananjay Jolh (2008). *Engineering Drawing with an introduction to AutoCAD*. Tata McGraw Hill Publishing Company Limited.

Problem Solving Using C

Semester II

14BEBI04/14BEVI05/14BELI05/14BEEI05/14BEPI05

Periods of Instruction/week:4

No.of credits:3

Objectives:

- 1.To understand the fundamentals of Computer and Information Technology
- 2.To understand what an algorithm is and to know how to express solution of a problem using an algorithm
- 3.To learn the concept and coding using C language.

Unit I Basics of Computer and Problem Solving Methodology 12

Digital Computer Fundamentals–Block diagram of computer–Components of a computer system–Applications of Computers–Hardware and Software definitions–Categories of Software–Booting–Installing and uninstalling Software–Software piracy–Software terminologies–Information Technology Basics–History of Internet–Internet Tools -Problem solving Techniques–Program–Program development cycle–Algorithm – Flow chart – Pseudo Code – Program control structures – Types and generation of programming languages – Development of algorithms for simple problems.

Unit II Basic Elements of C and Decision Making 12

Introduction to C – Lexical elements of C – Operators and expressions – Operator precedence and associativity of operators – Input and Output Functions – Simple computational problems - Control statements – Branching, looping, nested control structures, switch, break, continue, go to statements – Problems using control structures.

Unit III Functions, Program Structures and Arrays 12

Prototypes and Functions–Declaring, defining and accessing functions–Parameter passing methods – Recursion–Storage classes–auto, extern, static and register–Library functions–Programs using Functions - defining and processing arrays–Passing arrays to functions–Multi-dimensional arrays–Strings and basic operations on strings–Enumerated data types–Programs using simple sorting, searching and merging of arrays

Unit IV Pointers 12

Pointer concept–Declaration–Accessing variable through pointer–Initializing pointer variable–Pointers and Functions–Pointers and Arrays–Pointers and Structures–Example programs using pointers with function, arrays and structures–Command line arguments – Dynamic memory allocation–Operations on pointers

Unit V Structures, Union and File Handling 12

Structures–User defined data types–Union–Nested structure, passing structures to functions – Self referential structures - File pointer–High level File operations–Opening and closing of file–Creating, Processing and Updation on files–Simple file handling programs–Low level Programming –Additional Features of C.

Total Periods: 60

Text Books:

1.Jeri R. Hanly and Elliot B. Koffman, “Problem Solving and Program Design in C”, Fourth Edition, Pearson Education India, 2005.

2. Balagurusamy.E, “Programming in ANSI C”, Tata McGraw Hill, Third Edition 2006.

Reference:

2. Byron Gottfried, “Programming with C”, II Edition, (Indian Adapted Edition), TMH publications, 2006.

C Programming Practicals

Semester II

14BEBI05/14BEVI06/14BELI06/14BEEI06/14BEPI06

Periods of Instruction/week:3

No.of credits:1

Objective:

- 1.To provide hands on training on C language.

List of Exercises

C Programs:

- 1..Programs using conditional operator and if statement
- 2..Programs using SwitchCase Statements
- 3.Programms using for, while and do while loops
- 4.Programms using Arrays
- 5.Programms using Functions and Recursive Functions
- 6.Programms using Structures
- 7.Programms using Pointers
- 8.Programms using File Operations

Total Periods: 45

Electron Devices and Applications

Semester II
14BEBI06

Periods of Instruction/ week: 4
No. of credits: 3

Objectives

1. To impart knowledge on basic semiconductor and diode concepts.
2. To develop competence on transistor theory and its applications.
3. To provide essential concepts of power semiconductor devices.

Unit I Diodes

12

Review of the semiconductor theory - Semiconductor materials, The PN junction diode. The open circuited PN junction, The biased PN junction, VI characteristics and Temperature dependence of VI characteristics, Comparison between Ge and Si diodes, Diode large signals & small signal models, Junction diode switching times. The Schoktty barrier diodes. Applications of diode as Rectifiers, Clipping and Clamping, Voltage multipliers.

Unit II Bipolar Junction Transistor

12

Theory of BJT operation, CE, CB, CC Characteristics. DC biasing of BJTs, DC load line, Operating point, Fixed bias circuit, Collector to Base bias Emitter stabilized bias circuit, Voltage divider bias, Design of bias circuits based on V_{be} and Q point.

Unit III Field Effect Transistors

12

Construction & Characteristics of JFET's, Construction & Characteristics of depletion & enhancement type MOSFET- MOSFET handling, VMOS, DMOS and CMOS, Transistors. FET biasing, Fixed bias, Self-bias & Voltage divider biasing, Design of FET biasing circuits.

Unit IV Special Semiconductor Devices

12

Construction and Principle of working of UJT, Tunnel diode, LED, Photodiode, Phototransistor, Varactor diode. Applications of each device. Zener diode, Application as voltage regulator.

Unit V Power Semiconductor Devices

12

SCR – Construction, Switch on and switch off characteristics, Half wave & Full wave power control using SCR, SCS, Diac, Triac, GTO.

Total periods: 60

Text Book:

1. *Robert Boylested & Louis Nashelsky.(2002). Electronics Devices and Circuits Theory.* Fifth Edition, PHI.

Reference Books:

1. *Jacob Millman & Arvil Grabel.(2003). Microelectronics.* Second Edition. McGraw Hill
2. *Theodore, F. Bogart.J.R. (2003) . Electronic Devices & Circuits.* Fourth Edition. Prentice Hall.

Engineering Mechanics

Semester II

14BEVC02

Instruction Periods/ week: 4 (3+1)

No. of credits: 4

Objective

- To develop capacity to predict the effect of force and motion

Unit I	Basic and Statics of Particles	12
Introduction ,Units and Dimensions, Laws of Mechanics, Lame’s theorem, Parallelogram and triangular Law of forces, Coplanar forces, Resolution and Composition of forces, Equilibrium of a particle, Forces in space, Equilibrium of a particle in space, Equivalent systems of forces, Principles of transmissibility, Single equivalent force.		
Unit II	Equilibrium of Rigid Bodies	12
Free body diagram, Types of supports and their reactions, requirements of stable equilibrium, Moments and Couples, Moment of a force about a point and about an axis, Scalar components of a moment, Varignon’s theorem, Equilibrium of Rigid bodies in two dimensions, Equilibrium of Rigid bodies in three dimensions ,Examples.		
Unit III	Properties of Surfaces and Solids	12
Determination of Area and Volumes, First moment of area and the Centroid of sections, Rectangle, circle, triangle from integration section, I section, Angle section, Hollow section by using standard formula, second and product moments of plane area, Rectangle, triangle, circle from integration, T section, I section, Angle section by using standard formula, second and product moments of plane area, Parallel axis theorem and perpendicular axis theorem, Polar moment of inertia.		
Unit IV	Dynamics and Particles	12
Displacements, Velocity and acceleration, their relationship, Relative motion, Curvilinear motion, Newton’s law, Work Energy Equation of particles, Impulse and Momentum		
Unit V	Friction and Elements of Rigid Body Dynamics	12
Frictional force, Laws of column friction, simple contact friction, Rolling resistance, Belt friction Translation and Rotation of Rigid Bodies, Velocity and acceleration, General plane motion		

Total Periods: 60

Text books:

References:

- Beer F.P and Johnson Jr.E. R (2006). Vector Mechanics for Engineers. Vol.I statics and Vol.II Dynamics. McGraw ,Hill International Edition.**
- Hibbeler R.C (2006). Engineering Mechanics. Vol.I statics and Vol.II Dynamics. Pearson Education, Asia Pvt.Ltd.**
- Irving H.Shames(2006). Engineering Mechanics - Statics and Dynamics. Fourth Edition. . Pearson Education, Asia Pvt.Ltd.**

TextBooks:

1. Harold Kooritz & Heinz Wehrich (1998). *Essentials of Management*. Tata Mc-Graw Hill.

2. Joseph L Massie (2003). *Essentials of Management*. Fourth Edition, Prentice Hall of India.

References:

1. Tripathy PC And Reddy PN.(1999). *Principles of Management*. Tata Mc-Graw Hill.

2. Decenzo David, Robbin Stephen A(1996). *Personnel and Human Resources Management*. Prentice Hall of India.

3. Francis JAF Stomer, Freeman R. E and Daniel R Gilbert (2004). *Management*,Sixth Edition, Pearson Education.

Environmental Engineering

Semester II
14BEOI05

Periods of Instruction /week: 4
No. of credits: 3

Objectives

- To understand the concepts of Environmental Engineering and Green Computing

Unit I Ecosystems and Biodiversity

Environment- Definition, scope and importance, Ecosystem, Structure and function, Ecological succession, Introduction to various ecosystems. Biodiversity- Definition and types, Threats to Biodiversity in India and its impacts, Conservation of Biodiversity(self-study), Wildlife Protection Act, Forest Conservation Act, Concepts and definitions- disaster, hazard, vulnerability, risk, capacity, impact, prevention, mitigation. **12**

Unit II Global Environmental Issues

Green house gases, Green house effects (self-study), climate change, global warming and its effects, international climate conventions, protocols and perspectives, technology and policy options for GHG emission mitigation, ozone layer depletion and solutions. **12**

Unit III Green Computing

Impact of Information Technology- The Rise of the Global Village, Impact Technology: Powering the Graphic Revolution of Modern Computers (self-study), Initiative Planning- Engaging the Community to Enhance Business Intelligence, Important Roles of a Development Organization in Green Computing, Understanding Electronics Engineering as a Major Field of Specialization, High Impact Computer- Computer Power and Versatility for Business and Home Use, Information Technology Consulting- Providing Expert IT Support for Businesses, Managing Organization- Effective Ways towards New Management Practices Doing Green Business, Getting a Green IT Job. **12**

Unit IV Information Technology Organization

Things to Know about Information Technology Organization, What is Organization Technology?, Turning Old Computer Parts to Green, Go For Green Computers, Strategic Organization as a Process, Green Computers Initiatives (self-study), Green Computing Impact Organization Overview, Green Electronics Council, The Green Grid Framework, The CSCI Top Secrets Revealed, The EPEAT Standards, Green Computing Initiative Platforms **12**

Unit V Green Computing for Environmental Impact Management

Green Initiative Business- Organization Planning for Green Computing, Tips for Green Computing Strategic Initiative, Green Computing- Tips for Strategic Planning Organization, Implementing Green Computing in a Business Organization (self-study), Supply Chain Management- Procurement, Sourcing and Logistics, Green Technology Takes Off, Sustainable IT, Green Computing- An Effective Initiative To Energy And Resource Management. **12**

Total Periods : 60

Text books:

1. *Jason Harris (2003). Green Computing and Green IT Best Practices on Regulations and Industry Initiatives, Virtualization, Power Management, Materials Recycling and Telecommuting.* Emereopty Ltd.
2. *Santhosh Kumar Garg. RajeswariGarg and RanjaniGarg (2007). Environmental Science and Ecological Studies.* Second Edition. Khanna Publishers, New Delhi.

References:

1. *Gilbert M Masters (2004). Introduction to Environmental Engineering and Science.* Second Edition, Pearson Education Pvt.Ltd.
2. *Deswal S. and Deswal A (2004). A Basic Course in Environmental Studies.* First Edition. DhanpatRai& Co, Delhi.

Digital Electronics

Semester II
14BEOI04/14BEII04

Periods of Instruction /week: 4
No. of credits: 3

Objectives

- To understand Boolean algebra, Boolean functions and realization of functions with basic gates.
- To design combinational and sequential circuits.

Unit I Boolean algebra and Codes 12

Binary number systems, conversion, complements and arithmetic, Logic Gates, Boolean algebra and simplification of logical expressions, Canonical sum of products and product of sums expressions, minimization of logical expressions using Karnaugh map and tabulation method, Boolean expression implementation using universal gates, Alphanumeric codes, Error detecting and correcting codes.

Unit II Combinational Circuits and Their Design 12

Adders, Subtractors, Multiplier and Divider, Encoder, Priority encoder, Decoder, Multiplexer, Demultiplexer, Comparator, Parity generator/checker, Code converters, Multiplexers and decoders as building blocks, Programmable Logic Devices- ROM, PAL, PLA-Design using PLDs.

Unit III Synchronous Sequential Circuits and Their Design 12

Flip-flops, SR, JK, D, T, Master Slave, Level and Edge triggering, realization of one flip, flop using other flip-flop, Analysis of clocked sequential circuits their design, state minimization, Moore/Mealy model, state assignment, circuit implementation, Registers, Shift registers, Ripple counters, Synchronous counters, Design of synchronous sequential circuits, sequence detector.

Unit IV Asynchronous Sequential Circuits and Their Design 12

Analysis Procedure, Design procedure, State reduction, State assignment, Race Free State assignment, Hazards

Unit V Logic Gates and Families 12

Implementation of Logic gates using discrete components, Logic families, TTL,ECL, MOS families, TTL and CMOS parameters, Floating input, current and voltage parameters, noise margin, propagation delay, power dissipation, Fan in, Fan out and compatibility.

Total Periods: 60

Text Books:

1. *A.Anand Kumar (2006). Fundamentals of Digital Circuits.* Prentice Hall of India Learning Pvt Ltd.
2. *Stephen Brown and Zvonko Vranesic (2011).Fundamentals of Digital Logic Design with VHDL.* Second Edition. Tata McGraw Hill Education Private Limited.

References:

1. *M.Morris Mano (2003), Digital Design.* Prentice Hall of India Learning Pvt. Ltd.
2. *Malvino and Leach (2006), Digital Principles and Applications.* Sixth Edition. Tata McGraw Hill Education Private Limited.

Digital Electronics Practicals

Semester II
14BEOI06/14BEII06

Periods of Instruction /week: 3
No. of credits: 1

Objectives

- To construct digital circuits using standard ICs
- To study pin details, and internal logic of standard ICs and testing ICs.
- To implement and verify combinational circuits.
- To implement and verify sequential circuits like shift registers and counters.
- To design simple application using the above concepts

List of Experiments

1. Testing of logic gates
2. Design and verification of combinational logic circuits
(Boolean Expression implementation, Adder, Subtractor, Mux, Demux, Encoder, Decoder, Code converters, Parity Generator, Comparator)
3. Implementation of full adder using universal gates
4. Testing of flip-flops using gates and ICs
5. Design and verification of sequential logic circuits
(Counters, Shift register, Ring Counter)
6. Design and testing of sequence detector
7. Seven segment display system(using counter and decoder)

Total Periods : 45

Data Structures

Semester II
14BELI04

Periods of Instruction/week: 4
No. of credits: 3

Objectives

- To learn about performance analysis of algorithms.
- To understand the operations of Stacks, queues, linked lists, trees, and graphs.
- To study the searching and sorting algorithms.

Unit I Introduction to Data Structures

12

Introduction to data structures, Need for data structures, Type of data structures, Algorithm specification, Pseudo code conventions, Recursive algorithm, Time and Space complexity, Big"oh" notation.

Unit II Representation and Manipulation Of String

12

Definitions and Concepts, String Manipulation and Pattern Matching, Markov Algorithms, Primitive and Composite Functions, Grammars, Storage Representation of strings, String Manipulation Applications.

Unit III Trees

12

Definitions, Binary trees, operations on binary tree representations, node representation, internal and external nodes, implicit array representation, binary tree traversal, Binary search trees.

Unit IV Graphs And Their Applications

12

Graphs, representation of graphs, graph traversals, shortest path algorithm, a flow problem, Dijkstra's algorithm, minimum spanning trees, kruskals and prim's algorithm, application of scheduling.

Unit V Sorting and Searching Techniques

12

Insertion sort, selection sort, shell sort, bubble sort, quick sort, heap sort, merge sort, radix sort, Linear search, Binary search, Hashing, Open addressing, Chaining, Collision Resolution.

Total

Periods: 60

Outcome

The students will be familiar with

- Representing the various types of algorithms.
- Understanding the operations of Stacks, queues, linked lists, trees, and graphs.
- How to perform searching and sorting algorithms.

Text Books:

1. *R.F Gilberg and B.A Forouza(2005). Data Structures*, Second Edition, Thomson India Edition.
2. *M.A Weiss (2005). Data Structures and Algorithm Analysis in C*, Second Edition, Pearson Education.

References:

1. *Ellis Horowitz, Sartaj Sahni and Sanguthevar Rajasekaran, (2007).Computer algorithms/C++,* Second Edition,Universities Press (India)Private Limited.
2. *A.V.Aho, J.E.Hopcroft, and J.D.Ullman, (2003). Data structures and algorithms,* First Edition, Pearson education.
3. *Yedidiah Langsam, Moshe Augenstein, Aaron M.Tenenbaum,(2003) Data Structures using Java,* Pearson Education.

Communication Engineering

Semester II
14BEEI04

Instruction periods/week: 4
No. of credits: 3

Objectives

To study the following issues in communication engineering:

- Fundamentals of analog communication.
- Various types of transmission media.
- Digital modulation and multiplexing
- Basic network layers and data communication.
- Satellite And Optical Fiber Communications

Unit I Fundamentals of Analog Communication 12

Evolution-Basic Communication model, transmission, Reception, types of communication , Modulation,Need, Types,Analog Modulation, AM,FM Modulation and Demodulation,Comparison,Receivers,TRF,super heterodyne receiver , FM receivers

Unit II Transmission Medium 12

Transmission lines ,Types, equivalent circuit, losses, standing waves, impedance matching, band width; radio propagation, Ground wave and space wave propagation, critical frequency, maximum usable frequency, path loss, white Gaussian noise.

Unit III Digital Communication 12

Time division multiplexing, digital t,carrier system, pulse code modulation, digital radio system. Digital modulation: Frequency and phase shift keying, modulator and demodulator, bit error rate calculation.

Unit IV Data Communication and Network Protocol 12

Data communication codes, error control, serial and parallel interface, telephone network, data modem, ISDN, LAN, ISO, OSI seven layer architecture for WAN.

Unit V Satellite and Optical Fibre Communications 12

Orbital satellites and geostationary satellites, look angles, satellite system link models, satellite system link equations; advantages of optical fiber communication,light propagation through fiber, fiber loss, light sources and detectors.

Total Periods:60

Text Books:

1. *Wayne Tomasi(2001).Electronic communication systems*,Pearson Education, Third edition.
2. *Anokh Singh(2006). Principles of Communication Engineering*, S.Chand &Co.
3. *Kennedy.G(2002).Electronic Communication system*,McGrawHill, 4th edition.

References:

1. *Louis E.Frenzel(2008). Principles of electronic communications systems*, Tata McGrawHill, 3rd edition.
2. *Miller(2003).Modern Electronic communication*, Prentice Hall of India.
3. *Roy Blake(2002).Electronic communication systems*,Thomson Delmar, 2nd edition.

Introduction to Food Science and Technology

Semester II
14 BEFC02

Periods of Instruction/week:4
No.of credits:4

Objectives:

- 1.To enable the students understand the basics of food science and technology
- 2.To make the students appreciate the importance of nutrients and enable them to develop new product of high nutritive value

Unit I

12

Introduction to food science, food groups, classification, composition and nutritive value of common foods. Cereals, structure, nutritive value, characteristics, principle of cereal processing. Pulses, composition and nutritive value, principle of pulse processing.

Unit II

12

Vegetables,classification,composition and nutritive value, effects of different methods of processing. fruits,classification,composition and nutritive value,enzymatic browning.milk and milk products,composition,nutritive value,properties,types of milk products,principle of processing of milk and milk products,handling and storage.

Unit III

12

Egg,structure,composition,nutritive value,measures of quality,storage,use of egg in diet.freshly food,nutritive value of meat,fish and poultry,method of processing,effects of colors,texture and flavor,postmodern changes and factor affecting tenderness of meat.

Unit IV

12

Sugar,nutritive value,properties,sugar processing techniques.fats,nuts and oilseeds classification,composition,nutritive value,changes during processing and storage,uses of nuts and oilseeds.species and condiments,types,functions and uses.

Unit V

12

Moist heat,dry heat and fat as a media of cooking,merits and demerits.food fortification and enrichment,food adulteration,detection,control of common food adulterants.

Total Periods: 60

Textbook:

1. *B. Srilakshmi (2008). Food Science.* New age International P. Ltd, New Delhi.

References :

- 1.*Mc Williams (2007). Food Fundamentals.* John Willey and sons. New York.
- 2.*S. N. Mahindru (2009). Food Science and Technology.* Hardbound P.Ltd, New Delhi.
- 3.*N.Norman Potter (2009). Food Science.* Fifth Edition. Springerlink. New York.

Food Science Practicals

Semester II
14BEFC03

Periods of Instruction/week:3
No.of credits:2

Objectives:

To enable students understand the concept in food science and technology and apply the basic as practical

List of Experiments

1. Introduction of food groups
2. Determination of edible portions and food measurements.
3. Examination of starches under microscope
4. Dry and moist heating characteristics of starch
5. Experiment on germination of malting of pulse
6. Browning reaction fruits and vegetables
7. Testing pectin strength in fruit and vegetables extract
8. Experimental cookery of vegetable
9. Precipitation methods protein in milk
10. Tenderization of meat cuts
11. Effects of temperature on egg protein
12. Basic experiments in sugar cookery
13. Determination of the best frying temperature for different fats and oil

Total Periods: 45

Basic Civil and Mechanical Engineering

Semester II
14BEFI03

Periods of Instruction/week:4
No.of credits:3

Objectives:

- 1.The Subject introduce the characters of common constructive materials such as stones, bricks etc... and basic methods of measuring the field.
2. To provide knowledge about IC engines, boilers and power plant.

A- Civil Engineering

Unit I Surveying and Civil Engineering Materials 12

Surveying: Objects, types, classification, principles, measurements of distances, angles, leveling, determination of areas, illustrative examples.

Civil Engineering Materials: Bricks, stones, sand, cement, concrete, steel section.

Unit II Building Components and Structures 12

Foundations: Types, Bearing capacity, Requirement of good foundations.

Superstructure: Brick masonry, stone masonry, beams, columns, lintels, roofing, flooring, plastering, Mechanics, Internal and external forces, stress, strain, elasticity, Types of Bridges and Dams, Basics of Interior Design and Landscaping.

B-Mechanical Engineering

Unit III Power Plant Engineering 12

Introduction, Classification of Power Plants, Working principle of steam, Gas, Diesel, Hydroelectric and Nuclear Power plants, Merits and Demerits, Pumps and turbines, working principle of Reciprocating pumps (single acting and double acting), Centrifugal Pump.

Unit IV I C Engines 12

Internal combustion engines as automobile power plant, Working principle of Petrol and Diesel Engines, Four stroke and two stroke cycles, Comparison of four stroke and two stroke engines , Boiler used in power plant.

Unit V Refrigeration and Air Conditioning System 12

Terminology of Refrigeration and Air Conditioning. Principle of vapour compression and absorption system, Layout of typical domestic refrigerator, Window and Split room Air conditioner.

Total Periods : 60

References:

1. G.*Shanmugam and M.S.Palanichamy (1996).Basic Civil and Mechanical Engineering.* Tata Mc Graw Hill Publishing Co, New Delhi.
2. S.*Ramamrutham (1999).Basic Civil Engineering.* Dhanpat Rai Publishing Co. (P) Ltd.
3. S.*Seetharaman (2005). Basic Civil Engineering.* Anurdha Agencies.
- 4.K.*Venugopal and V.Prahu Raja (2000). Basic Mechanical Engineering.* Anuradha Publishers, Kumbakonam.
- 5.S.R.J.*Shantha Kumar (2000). Basic Mechanical Engineering.* Hi, tech Publications, Mayiladuthurai.

Environmental Engineering and Disaster Management

Semester II

Instructional period /week: 3

14BEII05

No. of credits: 3

Objectives

- To understand the constitutes of environment
- To conserve these resources
- To understand the role of a human being in maintaining a clean environment
- To understand how to maintain ecological balance

Unit I Environment, Ecosystems and Biodiversity

Definition, Scope and Importance of Environment , Need for Public Awareness , Concept of an Ecosystem , Structure and Function of an Ecosystem , Food Webs and Ecological Pyramids, Structure and Function of the (a) Forest Ecosystem (b) Grassland Ecosystem (c) Desert Ecosystem (d) Aquatic Ecosystems (Ponds, Streams, Lakes, Rivers, Oceans, Estuaries), Introduction to Biodiversity Definition: Genetic, Threats to Biodiversity, Conservation of Biodiversity.

12

Unit II Environmental Pollution

Definition, Causes, Effects and Control Measures of: (a) Air Pollution (b) Water Pollution (c) Soil Pollution (d) Marine Pollution (e) Noise Pollution (f) Thermal Pollution (g) Nuclear Hazards, Soil Waste Management: Causes, Effects and Control Measures of Municipal Solid Wastes, Role of an Individual in Prevention of Pollution , Pollution Case Studies, Disaster Management: Floods, Earthquake, Cyclone and Landslides. Field Study of Local Polluted Site, Urban / Rural / Industrial / Agricultural.

12

Unit III Natural Resources

Forest Resources: Use and Over, Exploitation, Deforestation, Case Studies, Water Resources: Use and Over, Utilization of Surface and Ground Water, Floods, Drought, Mineral Resources, Food Resources: Changes Caused By Agriculture And Overgrazing, Effects Of Modern Agriculture, Energy Resources: Renewable and Non Renewable Energy Sources, Use of Alternate Energy Sources. Land Resources: Land as a Resource, Land Degradation, Man Induced Landslides, Soil Erosion and Desertification. From Unsustainable to Sustainable Development, Urban Problems Related to Energy, Water Conservation, Rain Water Harvesting, Watershed Management Environmental Ethics: Issues and Possible Solutions, Climate Change, Global Warming, Acid Rain, Ozone Layer Depletion, Nuclear Accidents and Holocaust, Case Studies, Wasteland Reclamation, Consumerism and Waste Products , Environment Production Act.

12

Unit IV Types of Natural and Man Made Disaster

Natural Disasters: Meaning and Nature of Natural Disasters, Their Types and Effects. Climatic Change: Global Warming, Sea Level Rise, Ozone Depletion. Man Made Disasters: Nuclear Disasters, Chemical Disasters, Biological Disasters, Deforestation, Industrial Waste Water Pollution.

Unit V Disaster Management

12

Effect to Migrate Natural Disaster at National and Global Levels. International Strategy for Disaster Reduction. Concept of Disaster Management, National Disaster Management Framework, Financial Arrangements; Role of NGOs, Community, Based Organizations and Media. Central, State, District and Local Administration, Armed Forces in Disaster Response, Disaster Response, Police and Other Organizations.

Total Periods :60

Text books:

1. ***Gilbert M.Masters(2004). Introduction to Environmental Engineering and Science.*** 2nd edition, Pearson Education.
2. ***Benny Joseph(2006). Environmental Science and Engineering.*** Tata McGraw-Hill, New Delhi.
3. ***William G. Ramroth Jc(2007). Planning for Disaster: How natural and man made Diasater shape the built environment.*** Kaplon Publisher.

Reference books:

1. ***R.K. Trivedi. Handbook of Environmental Laws, Rules, Guidelines, Compliances and Standards,*** Vol. I and II, Enviro Media.
2. ***Cunningham, W.P. Cooper, T.H. Gorhani(2001). Environmental Encyclopedia.*** Jaico Publ., House, Mumbai, 2001.
3. ***K.K. Singh, A. K. Singh(2010). Natural and Man Made Disasters: Vulnerability, Preparedness and Mitigation.*** MD Publications.

Management Information System

Semester II

Instruction Periods/ week: 3

14 BEPI04

No. of credits: 3

Objectives

To study the organisation system concept with its functional management and managing the database

Unit I The Organisation & System Concept 9

Its Manager, Structure and activities, Introduction, The environment of organisations -Information flows, Information needs and sources of information, Types of management decisions and information need, Business and Technical Dimensions of information. System classification, System concept, system characteristics, The elements of systems ; Input, output, process, feedback control and boundary, System function and operations, Transactions processing Information system. Information system for managers. Intelligence information systems, The meaning and role of MIS.

Unit II System Analysis and Design 9

The work of system analyst, The assignment brief and mutual investigation, feasibility study, system design, Data collection and preparation, Detailed system Design, Implementation, Evaluation and maintenance of MIS, Pitfalls in mis-development.

Unit III Functional Management Information Systems 9

Production information system, Marketing information system, Accounting information system, Financial Information System, Personnel Information System. Inter-relationship of Functional Management Information Systems.

Unit IV Data Base Systems 9

Information as a resource, meaning of Data base, Components of data base, DBMS, Data base Technology, Operations data base/Managerial Database, Comparison of DEMS, Design Principles of data base, Data base administration, Advantages and disadvantages of data base.

Unit V Computer Power 9

Source and selection : Computer purchase, Computer rental from the manufacturer, Computer lease from a third party, acquisition of a used Computer, Computers, Service centres, Time Sharing Companies, Facilities management Companies, The criteria for choice, Computer System Selection, Acquiring a small business computer, Source selection.

Total Periods: 45

Reference:

1. *SCOTT, G.M., Principles of Management Information systems*, McGraw-Hill Education (1995).
2. *DAVIS AND OLSON, Management Information System*, McGraw Hill Education (1998).
3. *LUCAS, The Analysis, Design and Implementation of information System*, McGraw Hill Book Company (1998).
4. M.J. Systems, USA, <http://www/kjsi.com>.
5. IBM, USA, <http://www/ibm.com>.
6. MR Informatic, Germany, www.mr.informatik.de.