AMITY UNIVERSITY
RAJASTHAN

PROGRAMME STRUCTURE

Electronics & Communication Engineering

Bachelor of Technology
(Electronics & Communication Engineering)
Programme Code: BEC(2019-2023)

Duration – 4 Years Full Time

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PROGRAMME STRUCTURE
Electronics & Communication Engineering

Program Outcomes (POs)
ELECTRONICS AND COMMUNICATION ENGG.

PLO.1-An ability to apply and understand the knowledge of mathematics, science and engineering.

PL0.2-Knowledge and understanding of mathematics through differential and integral calculus, and basic sciences and engineering topics (including computing science) necessary to analyze and design complex electrical and electronic devices, software, and systems containing embedded hardware and software components and their design.

PLO.3-Develop and deploy engineering/technological solutions using latest techniques & tools/CAD (VHDL, MATLAB, Or-cad, VLSI, Antenna Design) imbibing concern for eco-system, and an attitude to serve society & humanity at large.

PLO.4-Graduates will successfully engage themselves in practice of multidisciplinary engineering or relevant fields; They will pursue wide-spectrum careers appropriately as technologists, innovators, consultants, managers & entrepreneurs and will advance in their profession.

PLO.5-An ability to design and conduct experiments as well as to analyze and interpret data.

PLO.6-An ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, health and safety.

PLO7-An ability to identify, formulate, and solve engineering problems.

PLO8-Knowledge of probability and statistics, including applications appropriate to the electrical engineering (Electronics, Communication, Processing and Embedded technology)

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Credit Summary

Sem	Core course CC	Domain Electives DE	Values Added VAC	Open Electives	NTCC	Total
I	24	-	4	-	--	28
II	22	-	4	3	-	29
III	20	3	4	3	---	29
IV	16	3	4	3	---	26
V	12	3	4	3	6	28
VI	16	3	4	3	--	20
VII	12	-	4	3	6	25
VIII	8	3	--	--	12	23

Semester I

Code	Course	Category	L	T	P	Credits
Core Courses						
AM 101	Applied Mathematics – I	CC	3	1	-	4
AP 102	Applied Physics - I – Fields & Waves	CC	2	1		3
AC 103	Applied Chemistry	CC	2	1		3
BME 104	Element of Mechanical Engineering	CC	2	1		3
BCS 104	Introduction to Computers & Programming in C	CC	2	1		3
BEE 105	Basic Electrical Engg.	CC	2	1		3
Practical Courses						
AP 122	Applied Physics lab	CC	-	-	2	1
AC 123	Applied Chemistry lab	CC	-	-	2	1
BME 124	Element of Mechanical Engineering lab	CC	-	-	2	1

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BCS 124	Programming in C lab	CC	-	-	2	1
BEE 125	Basic Electrical Engg. Lab	CC	-	-	2	1
Value Added Courses						
BCS 101	English	VA	1	-	-	1
BSS 104	Behavioral Science-I		1	-	-	1
FLT 101	French		2	-	-	2
FLG 101	German					
FLS 101	Spanish					
FLC 101	Chinese					
Total						28

Semester II						
Code	**Course**	**Category**	**L**	**T**	**P**	**Credits**
Core Courses						
AM 201	Applied Mathematics – II	CC	3	1	-	4
AP 202	Applied Physics - II – Modern Physics	CC	2	1		3
BCS 203	Object Oriented Programming using C++	CC	2	1		3
BME 204	Engineering Mechanics	CC	2	1		3
BME 205	Engineering Graphics	CC	1			1
EVS 001	Environmental Studies	CC	3	1	-	4
Practical Courses						
AP 222	Applied Physics - II – Modern Physics lab	CC	-	-	2	1
BCS 223	Object Oriented Programming using C++ lab	CC	-	-	2	1
BME 224	Engineering Mechanics lab	CC	-	-	2	1
BME 225	Engineering Graphics lab	CC	-	-	2	1
Open Elective-I						
	OPEN ELECTIVE – I	OE	3	-	-	3
Value Added Courses						
BCS 201	English	VA	1	-	-	1
BSS 204	Behavioral Science-II (Problem Solving & Creation thinking)	VA	1	-	-	1

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FLT 201 FLG 201 FLS 201 FLC 201	Foreign Language – II French German Spanish Chinese	VA	2	-	-	2
Total						**29**

	Semester III					
Code	**Course**	**Category**	**L**	**T**	**P**	**Credits**
Core Courses						
AM 301	Applied Mathematics – III	CC	3	-	-	3
BEC 302	Analog Electronics-I	CC	3	1	-	4
BEC 303	Circuits & Systems	CC	3	1	-	4
BEC304	Signal & Systems	CC	2	1	-	3
BEC305	Java Programming	CC	3	-	-	3
Practical Courses						
BEC322	Analog Electronics-I Lab	CC	-	-	2	1
BEC 323	Circuits & Systems Lab	CC	-	-	2	1
BEC 325	Java Programming Lab	CC	-	-	2	1
Domain Elective-I: Student must select one course from the following courses						
BEC 306	Electromagnetic Properties of Materials	DE	2	1		3
BEC 307	Measurements & Instrumentation	DE	2	1		3
Open Elective						
	OPEN ELECTIVE – II	OE	3		-	3
Value Added Courses						
BCS 301	Communication Skills – I	VA	1	-	-	1
BSS 304	Behavioral Science-III (Interpersonal Communication)	VA	1	-	-	1

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	Foreign Language – III	VA	2	-	-	2
FLT 301	French					
FLG 301	German					
FLS 301	Spanish					
FLC 301	Chinese					
Total						**30**

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Semester IV						
Code	**Course**	**Category**	**L**	**T**	**P**	**Credits**
Core Courses						
BEC 401	Digital Circuits & Systems-I	CC	3	-		3
BEC 402	Analog Electronics-II	CC	3	-		3
BEC 403	Communication Systems	CC	3	-	-	3
BEE 404	Control System	CC	3	-		3
Practical Courses						
BEC 421	Digital Circuits & Systems-I Lab	CC			2	1
BEC 422	Analog Electronics-II Lab	CC			2	1
BEC 423	Communication Systems Lab	CC			2	1
BEE 424	Control System Lab	CC			2	1
Domain Elective-II: Student has to select one course from the following courses						
BEC 405	Computer Oriented Numerical Methods	DE	2	1		3
BEC 406	Electromagnetic Field Theory	DE	2	1		3
Open Elective						
	OPEN ELECTIVE – III	OE	3			3
Value Added Courses						
BCS 401	Communication Skills – II	VA	1	-	-	1
BSS 404	Behavioral Science-IV (Relationship Management)	VA	1	-	-	1
 FLT 401 FLG 401 FLS 401 FLC 401	Foreign Language – IV French German Spanish Chinese	VA	2	-	-	2
Total						**26**

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Semester V						
Code	**Course**	**Category**	**L**	**T**	**P**	**Credits**
Core Courses						
BEC 501	Microprocessor and Microcontroller Systems	CC	3	-		3
BEC 502	Digital Circuits & Systems-II	CC	3	-	-	3
BEC 503	Digital Communications	CC	3	-		3
BEC 550	Practical Training (Evaluation)	CC	-	-	-	6
Practical Courses						
BEC 521	Microprocessor and Micro Controller Lab	CC			2	1
BEE 528	MATLAB theory and practices	CC	-	-	2	1
BEC 522	Digital Circuits & Systems-II Lab	CC			2	1
Domain Elective-III: Student has to select one course from the following courses						
BEC 505	Telecommunication Networks	DE	3			3
BEC 506	Operating Systems	DE	3			3
BEE 505	Computer System Architecture	DE	3			3
Open Elective						
	OPEN ELECTIVE – IV	OE	3			3
Value Added Courses						
BCS 501	Communication Skills – III	VA	1	-	-	1
BSS 504	Behavioral Science-V (Understanding self for effectiveness	VA	1	-	-	1
FLT 501 FLG 501 FLS 501 FLC 501	Foreign Language – V French German Spanish Chinese	VA	2	-	-	2
Total						28

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Semester VI						
Code	**Course**	**Category**	**L**	**T**	**P**	**Credits**
Core Courses						
BEC 601	VLSI Design	CC	3	-		3
BEC 602	Digital Signal Processing	CC	3	-		3
BEC 603	Microwave Engineering	CC	3	-		3
BEE 601	Power Electronics	CC	3	-	-	3
Practical Courses						
BEC 621	VLSI Design lab	CC			2	1
BEC 622	Digital Signal Processing lab	CC			2	1
BEC 623	Microwave Engineering lab	CC			2	1
BEE 621	Power Electronics Lab	CC		-	2	1
Domain Elective-IV: Student has to select one course from the following courses						
BEC 605	Measurement & Measuring Instruments	DE	3			3
BEC 606	Data Structures and IT	DE	3			3
BEC 607	Information Theory & Coding	DE	3			3
Open Elective						
	OPEN ELECTIVE – V	OE	3			3
Value Added Courses						
BCS 601	Communication Skills – IV	VA	1	-	-	1
BSS 604	Understanding self for Effectiveness – VI	VA	1	-	-	1
FLT601 FLG 601 FLS 601 FLC 601	Foreign Language – VI French German Spanish Chinese	VA	2	-	-	2
Total						**26**

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Semester VII						
Code	**Course**	**Category**	**L**	**T**	**P**	**Credits**
Core Courses						
BEC 701	Radar & Satellite Communications	CC	3	-		3
BEC 702	Digital Image Processing	CC	3	-		3
BEC 703	Analog CMOS IC Design	CC	3	-		3
Practical Courses						
BEC 721	Radar & Satellite Communications Lab	CC			2	1
BEC 722	Digital Image Processing lab	CC			2	1
BEC 723	Analog CMOS IC Design lab	CC			2	1
BEC 750	Industrial Training (Evaluation)	CC				3
	Seminar	CC				3
Open Elective						
	OPEN ELECTIVE – VI	OE	3			3
Value Added Courses						
BCS 701	Communication Skills – V	VA	1	-	-	1
BSS 704	Understanding self for effectiveness – VII	VA	1	-	-	1
FLT 701 FLG 701 FLS 701 FLC 701	Foreign Language – VII French German Spanish Chinese	VA	2	-	-	2
	TOTAL					**25**

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Semester VIII						
Code	**Course**	**Category**	**L**	**T**	**P**	**Credits**
Core Courses						
BEC 801	Antenna & Wave Propagation	CC	3	-	-	3
BEC 802	Embedded System Design and Device Driver Development	CC	3	-		3
Practical Courses						
BEC 822	Embedded System Design and Device Driver Development lab	CC		-	2	1
BEC 821	Antenna & Wave Propagation Lab	CC		-	2	1
BEC 861	Project	CC				12
Domain Elective-V: Student must select one course from the following courses						
BEC 803	Instrumentation	DE	3			3
BEC 804	Nanoscience & Nanotechnology	DE	3			3
BEC 805	Robotics & Automation	DE	3			3
	Total					**23**

Total credit	**216**

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APPLIED MATHEMATICS – I

Course Code: AM 101 **Credit Units: 04**

Course Objective:
The knowledge of Mathematics is necessary for a better understanding of almost all the Engineering and Science subjects. Here our intention is to make the students acquainted with the concept of basic topics from Mathematics, which they need to pursue their Engineering degree in different disciplines.

Course Contents:

Module I: Differential Calculus
Successive differentiation, Leibnitz's theorem (without proof), Mean value theorem, Taylor's theorem (proof), Remainder terms, Asymptote & Curvature, Partial derivatives, Chain rule, Differentiation of Implicit functions, Exact differentials, Tangents and Normals, Maxima, Approximations, Differentiation under integral sign, Jacobians and transformations of coordinates.

Module II: Integral Calculus
Fundamental theorems, Reduction formulae, Properties of definite integrals, Applications to length, area, volume, surface of revolution, improper integrals, Multiple Integrals-Double integrals, Applications to areas, volumes.

Module III: Ordinary Differential Equations
Formation of ODEs, Definition of order, degree & solutions, ODE of first order : Method of separation of variables, homogeneous and non homogeneous equations, Exactness & integrating factors, Linear equations & Bernoulli equations, General linear ODE of n^{th} order, Solution of homogeneous equations, Operator method, Method of undetermined coefficients, Solution of simple simultaneous ODE.

Module IV: Vector Calculus
Scalar and Vector Field, Derivative of a Vector, Gradient, Directional Derivative, Divergence and Curl and their Physical Significance, Arc Length, Tangent, Directional Derivative, Evaluation of Line Integral, Green's Theorem in Plane (without proof), Representation of Surfaces, Tangent Plane and Surface Normal, Surface Integral, Stoke's Theorem (without proof), Gauss Divergence Theorem (without proof).

Examination Scheme:

Components	A	CT	S/V/Q	HA	EE
Weightage (%)	5	15	5	5	70

CT: Class Test, HA: Home Assignment, S/V/Q: Seminar/Viva/Quiz, EE: End Semester Examination;
Att: Attendance

Text & References:

Text:
- Differential Calculus by Shanti Narain
- Integral Calculus by Shanti Narain

References:
- Differential Equation by A.R. Forsyth
- Higher Engineering Mathematics by H.K. Dass

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APPLIED PHYSICS - I - FIELDS AND WAVES

Course Code: AP 102 **Credit Units: 03**

Course Objective:
Aim of this course is to introduce the students to fundamentals of graduate level physics, which form the basis of all applied science and engineering

Course Contents:

Module I: Oscillations & Waves Oscillations
Introduction to S.H.M. Damped Oscillations: Differential Equation and its solution, logarithmic decrement, Quality Factor, Different conditions of damping of harmonic oscillations. Forced oscillations: Amplitude and Frequency Response, Resonance, Sharpness of Resonance
Plane. Progressive Waves: Differential Equation and Solution, Superposition of Progressive Waves stationary waves. Ultrasonics: Generation and application of ultrasonicwaves.

Module II: Wave Nature of Light Interference:
Coherent Sources, Conditions of interference, Interference due to division of wavefront, Fresnels biprism Interference due to division of amplitude, Newton's rings, Interference due to thin films .Diffraction: Fresnel and Fraunhofer diffraction, Fraunhofer diffraction at a single slit, double slit, N Slits, Transmission grating, Rayleigh criterion and Resolving power of grating. Polarization: Birefringence, Nicol prism, Production and analysis of plane, circularly and elliptically polarized light, Half and quarter wave plates, Optical rotation, Polarimeter.

Module III: Electromagnetics
Scalar and vector fields, gradient of a scalar field, physical significance of gradient, equipotential surface. Line, surface and volume integrals, Divergence and curl of vector field and mathematical analysis physical significance, Electric flux, Gauss' law, Proof and Applications, Gauss divergence and Stokes theorems.
Differential form of Gauss' Law, Amperes' Law, Displacement current, Faradays Law, Maxwell equations in free space & isotropic media (Integral form & differential form), EM wave propagation in free space, Poynting vector.

Examination Scheme:

Components	A	CT	S/V/Q	HA	EE
Weightage (%)	5	15	5	5	70

CT: Class Test, HA: Home Assignment, S/V/Q: Seminar/Viva/Quiz, EE: End Semester Examination; Att: Attendance

Text & References:

Text
- Waves & oscillation, A. P. French
- Physics of waves, W. C. Elmore & M. A. Heald
- Introduction to Electrodynamics, D. J. Griffith

Reference
- Electrodynamics, Gupta, Kumar & Singh
- Optics, A. K. Ghatak
- Engineering Physics, Satya Prakash

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APPLIED CHEMISTRY

Course Code: AC 103 **Credit Units: 03**

Course Objective:
Four basic sciences, Physics, Chemistry, Mathematics and Biology are the building blocks in engineering and technology. Chemistry is essential to develop analytical capabilities of students, so that they can characterize, transform and use materials in engineering and apply knowledge in their field. All engineering fields have unique bonds with chemistry whether it is Aerospace, Mechanical, Environmental and other fields the makeup of substances is always a key factor, which must be known. For electronics and computer science engineering, apart from the material, computer modeling and simulation knowledge can be inherited from the molecule designing. The upcoming field of technology like Nanotechnology and Biotechnology depends fully on the knowledge of basic chemistry. With this versatile need in view, course has been designed in such a way so that the student should get an overview of the whole subject.

Course Contents:

Module I: Water Technology
Introduction and specifications of water, Hardness and its determination (EDTA method only), Alkalinity, Boiler feed water, boiler problems – scale, sludge, priming & foaming: causes & prevention, Boiler problems – caustic embitterment & corrosion: causes & prevention, Carbonate & phosphate conditioning, colloidal conditioning & calgon treatment Water softening processes: Lime – soda process, Ion exchange method, Water for domestic use.

Module II: Fuels
Classification, calorific value of fuel, (gross and net), Determination of calorific value of fuels, bomb calorimeter, Solid fuels - Proximate and ultimate analysis, Octane & Cetane No. and its significance. Numericals on combustion.

Module III: Instrumental Methods of analysis
Introduction; Principles of spectroscopy; Laws of absorbance IR : Principle, Instrumentation, Application UV : Principle, Instrumentation, Application NMR : Principle, Instrumentation, Application

Module III: Lubricants
Introduction; Mechanism of Lubrication; Types of Lubricants; Chemical structure related to Lubrication; Properties of lubricants; Viscosity and Viscosity Index; Iodine Value; Aniline Point; Emulsion number; Flash Point; Fire Point; Drop Point; Cloud Point; Pour Point. Selection of Lubricants.

Module VI: Corrosion
Introduction, Mechanism of dry and wet corrosion, Types of corrosion-Galvanic, Concentration cell, soil, pitting, intergranular, waterline. Passivity. Factors influencing corrosion. Corrosion control.

Examination Scheme:

Components	A	CT	S/V/Q	HA	EE
Weightage (%)	5	15	5	5	70

CT: Class Test, HA: Home Assignment, S/V/Q: Seminar/Viva/Quiz, EE: End Semester Examination; Att: Attendance

Text & References:

Text:
- Engineering Chemistry- Jain and Jain
- Engineering Chemistry - Sunita Rattan

- Engineering Chemistry - Shashi Chawla

References:

- Engineering Chemistry – Dara and Dara
- Spectroscopy- Y.R Sharma
- Corrosion Engineering – Fontenna and Greene

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ELEMENT OF MECHANICAL ENGINEERING

Course Code: BME 104 **Credit Units: 03**

Course Objective:
The objective of this course is to impart the basic knowledge of thermodynamics, stress- strain, materials & their properties and various manufacturing processes to the students of all engineering discipline.

Course Contents:

Module I: Fundamental Concepts
Definition of thermodynamics, system, surrounding and universe, phase, concept of continuum, macroscopic & microscopic point of view, Thermodynamic equilibrium, property, state, path, process, cyclic process, Zeroth, first and second law of thermodynamics, Carnot Cycle, Introduction to I.C. Engines-two &four stoke S.I. and C.I. engines. Otto cycle. Diesel cycle.

Module II: Stress And Strain Analysis
Simple stress and strain: introduction, normal shear, and stresses-strain diagrams for ductile and brittle materials. Elastic constants, one-dimensional loadings of members of varying cross-section, Strain Energy, Properties of material-strength, elasticity, stiffness, malleability, ductility, brittleness, hardness and plasticity etc; Concept of stress and strain stress strain diagram, tensile test, impact test and hardness test.

Module III: Casting & Forging
Introduction of casting, pattern, mould making procedures, sand mould casting, casting defects, allowances of pattern. Forging-introduction, upsetting & drawing out, drop forging, press forging & m/c forging

Module IV: Welding & Sheet metal working
Introduction of welding processes, classification, gas welding, arc welding, resistance welding. Introduction to sheet metal shop, Shearing, trimming, blanking, piercing, shaving, notching, stretch forming, nibbling coining, embossing and drawing.

Examination Scheme:

Components	A	CT	S/V/Q	HA	EE
Weightage (%)	5	15	5	5	70

CT: Class Test, HA: Home Assignment, S/V/Q: Seminar/Viva/Quiz, EE: End Semester Examination; Att: Attendance

Text & References:

Text
- Engineering thermodynamics, by P.K. Nag, Tata McGraw Hill.
- Thermal Engineering, by D.S. Kumar. S.K. Kataria and Sons.
- Thermal Engineering by PL Ballaney; Khanna Publishers, Delhi.
- Engineering Thermodynamics: Work and Heat Transfer, by Rogers and Mayhew, ELBS Publications

Reference
- Heine, R.W. C.R. Loper and P.C. Rosenthal, Principles of metal casting McGraw Hill
- Welding Technology by R.S. Parmar, Khanna Publishers.
- Thermodynamics and Heat Engines Volume-I, by R. Yadav: Central Publications.
- Ganesan, V. Internal Combustion Engine, Tata McGraw-Hill.
- Mathur, M.L. and Sharma, R.P. Internal Combustion Engine. Dhanpat Rai Publication

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INTRODUCTION TO COMPUTERS AND PROGRAMMING IN C

Course Code: BCS 104 **Credit Units: 03**

Course Objective:
The objective of this course module is to acquaint the students with the basics of computers system, its components, data representation inside computer and to get them familiar with various important features of procedure oriented programming language i.e. C.

Course Contents:

Module I: Introduction
Introduction to computer, history, von-Neumann architecture, memory system (hierarchy, characteristics and types), H/W concepts (I/O Devices), S/W concepts (System S/W & Application S/W, utilities). Data Representation: Number systems, character representation codes, Binary, octal, hexadecimal and their interconversions. Binary arithmetic, floating point arithmetic, signed and unsigned numbers, Memory storage unit.

Module II: Programming in C
History of C, Introduction of C, Basic structure of C program, Concept of variables, constants and data types in C, Operators and expressions: Introduction, arithmetic, relational, Logical, Assignment, Increment and decrement operator, Conditional, bitwise operators, Expressions, Operator precedence and associativity. Managing Input and output Operation, formatting I/O.

Module III: Fundamental Features in C
C Statements, conditional executing using if, else, nesting of if, switch and break Concepts of loops, example of loops in C using for, while and do-while, continue and break. Storage types (automatic, register etc.), predefined processor, Command Line Argument.

Module IV: Arrays and Functions
One dimensional arrays and example of iterative programs using arrays, 2-D arrays Use in matrix computations. Concept of Sub-programming, functions Example of user defined functions. Function prototype, Return values and their types, calling function, function argument, function with variable number of argument, recursion.

Module V: Advanced features in C
Pointers, relationship between arrays and pointers Argument passing using pointers, Array of pointers. Passing arrays as arguments. Strings and C string library. Structure and Union. Defining C structures, Giving values to members, Array of structure, Nested structure, passing strings as arguments. File Handling.

Examination Scheme:

Components	A	CT	S/V/Q	HA	EE
Weightage (%)	5	15	5	5	70

CT: Class Test, HA: Home Assignment, S/V/Q: Seminar/Viva/Quiz, EE: End Semester Examination; Att: Attendance

Text & References:

Text:
- "ANSI C" by E Balagurusamy
- Yashwant Kanetkar, "Let us C", BPB Publications, 2nd Edition, 2001.
- Herbert Schildt, "C:The complete reference", Osbourne Mcgraw Hill, 4th Edition, 2002.
- V. Raja Raman, "Computer Programming in C", Prentice Hall of India, 1995.

References:

- Kernighan & Ritchie, "C Programming Language", The (Ansi C Version), PHI, 2nd Edition.
- J. B Dixit, "Fundamentals of Computers and Programming in 'C'.
- P.K. Sinha and Priti Sinha, "Computer Fundamentals", BPB publication.

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BASIC ELECTRICAL ENGINEERING

Course Code: BEE 105 **Credit Units: 03**

Course Objective:
The objective of the course is to provide a brief knowledge of Electrical Engineering to students of all disciplines. This Course includes some theorems related to electrical, some law's related to flow of current, voltages, basic knowledge of Transformer, basic knowledge of electromagnetism, basic knowledge of electrical network.

Course Contents:

Module I: Basic Electrical Quantities
Basic Electrical definitions-Energy, Power, Charge, Current, Voltage, Electric Field Strength, Magnetic Flux Density, etc., Resistance, Inductance and Capacitance. Ideal Source, Independent Source and Controlled Source

Module II: Network Analysis Techniques & Theorems
Circuit Principles: Ohm's Law, Kirchoff's Current Law, Kirchoff's Voltage Law Network Reduction: Star–Delta Transformation, Source Transformation, Nodal Analysis, Loop analysis. Superposition theorem Thevenin's Theorem, Norton's theorem and Reciprocity theorem.

Module III: Alternating Current Circuits
Peak, Average and RMS values for alternating currents, Power calculation: reactive power, active power, Complex power, power factor, impedance, reactance, conductance, susceptance Resonance: series Resonance, parallel resonance, basic definition of Q factor & Band-width.

Module IV: Transformers
Basic Transformer Operation principle, Construction, Voltage relations, Current relations, Linear circuit models, Open circuit test, Short circuit test, Transformer Efficiency.

Examination Scheme:

Components	A	CT	S/V/Q	HA	EE
Weightage (%)	5	15	5	5	70

CT: Class Test, HA: Home Assignment, S/V/Q: Seminar/Viva/Quiz, EE: End Semester Examination; Att: Attendance

Text & References:

Text
- R.J. Smith, R.C. Dorf: Circuits, devices and Systems
- B.L. Thareja: Electrical Technology : Part -1 & 2

Reference
- V. Deltoro: Electrical Engineering fundamentals
- Schaum's Series: Electrical Circuits

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APPLIED PHYSICS LAB - I

Course Code: **AP 122** **Credit Units: 01**

List of Experiments:

1. To determine the wavelength of sodium light by Newton's rings method.
2. To determine the dispersive power of the material of prism with the help of a spectrometer.
3. To determine the specific rotation of sugar by Bi-quartz or Laurent half shade polarimeter.
4. To determine the speed of ultrasonic waves in liquid by diffraction method.
5. To determine the width of a narrow slit using diffraction phenomena.
6. To determine the temperature coefficient of platinum wire, using a platinum resistance thermometer and a Callender & Griffth's bridge.
7. To determine the value of specific charge (ratio of e/m) of an electron by Thomson method.
8. To determine the internal resistance of Leclanche cell with the help of Potentiometer.
9. To determine the resistance per unit length of a Carey Foster's bridge wire and also to find out the specific resistance of a given wire.
10. To plot graph showing the variation of magnetic field with distance along the aixs of a circular coil carrying current, and hence estimate the radius of the coil.
11. To determine the value of acceleration due to gravity ('g') in the laboratory using bar pendulum.
12. To determine the moment of inertia of a flywheel about its own axis of rotation.
13. To determine the density of material of the given wire with the help of sonometer.

Examination Scheme:

IA				EE	
A	**PR**	**LR**	**V**	**PR**	**V**
5	10	10	5	35	35

Note: IA –Internal Assessment, EE- External Exam, PR- Performance, LR – Lab Record, V – Viva.

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APPLIED CHEMISTRY LAB

Course Code: AC 123 **Credit Units: 01**

List of Experiments:

1. To determine the ion exchange capacity of a given cation exchanger.
2. To determine the temporary, permanent and total hardness of a sample of water by complexometric titration method.
3. To determine the type and extent of alkalinity of given water sample.
4. To determine the number of water molecules of crystallization in Mohr's salt (ferrous ammonium sulphate) provided standard potassium dichromate solution (0.1N) using diphenylamine as internal indicator.
5. To determine the ferrous content in the supplied sample of iron ore by titrimetric analysis against standard $K_2Cr_2O_7$ solution using potassium ferricyanide $[K_3Fe(CN)_6]$ as external indicator.
6. (a) To determine the surface tension of a given liquid by drop number method.
   (b) To determine the composition of a liquid mixture A and B (acetic acid and water) by surface tension method.
7. To prepare and describe a titration curve for phosphoric acid – sodium hydroxide titration using pH-meter.
8. (a) To find the cell constant of conductivity cell.
   (b) Determine the strength of hydrochloric acid solution by titrating it against standard sodium hydroxide solution conductometrically
9. Determination of Dissolved oxygen in the given water sample.
10. To determine the total residual chlorine in water.
11. Determination of amount of oxalic acid and H_2SO_4 in 1 L of solution using N/10 NaOH and N/10 $KMnO_4$ solution.
12. Determination of viscosity of given oil by means of Redwood viscometer I.
13. To determine flash point and fire point of an oil by Pensky Martin's Apparatus
14. To determine the Iodine value of the oil.

Examination Scheme:

IA				EE	
A	**PR**	**LR**	**V**	**PR**	**V**
5	10	10	5	35	35

Note: IA –Internal Assessment, EE- External Exam, PR- Performance, LR – Lab Record, V – Viva.

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PROGRAMME STRUCTURE

Electronics & Communication Engineering

ELEMENT OF MECHANICAL ENGINEERING LAB

Course Code: BME 124 **Credit Units: 01**

List of Experiments:

1. Welding

   (a) Arc Welding
   - Butt Joint
   - Lap Joint
   - T Joint

   (b) Gas Welding
   - Butt Joint
   - Lap Joint
   - Brazing of Broken pieces

2. Foundry
   - Sand mould casting by single piece pattern& Split pattern bracket with cores

3. Sheet Metal
   - Dust Bin
   - Mug
   - Funnel
   - Cylindrical Mug with handle-Rectangular

4. Fitting Shop
   - Male – Female Joint
   - Rectangular piece
   - Filing the job

Examination Scheme:

IA				EE	
A	**PR**	**LR**	**V**	**PR**	**V**
5	10	10	5	35	35

Note: IA –Internal Assessment, EE- External Exam, PR- Performance, LR – Lab Record, V – Viva.

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PROGRAMME STRUCTURE

Electronics & Communication Engineering

INTRODUCTION TO COMPUTERS & PROGRAMMING IN C LAB

Course Code: **BCS 124** **Credit Units: 01**

Software Required: Turbo C

List of Experiments:

1. C program involving problems like finding the nth value of cosine series, Fibonacci series. Etc.
2. C programs including user defined function calls
3. C programs involving pointers and solving various problems with the help of those.
4. File handling

Examination Scheme:

IA				EE	
A	**PR**	**LR**	**V**	**PR**	**V**
5	10	10	5	35	35

Note: IA –Internal Assessment, EE- External Exam, PR- Performance, LR – Lab Record, V – Viva.

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PROGRAMME STRUCTURE

Electronics & Communication Engineering

BASIC ELECTRICAL ENGINEERING LAB

Course Code: BEE 125 **Credit Units: 01**

List of Experiments:

1. To verify KVL & KCL in the given network.
2. To verify Superposition Theorem.
3. To verify Maximum Power Transfer Theorem.
4. To verify Reciprocity Theorem.
5. To determine and verify R_{Th}, V_{Th}, R_N, I_N in a given network.
6. To perform open circuit & short circuit test on a single-phase transformer.
7. To study transient response of a given RLC Circuit.
8. To perform regulation, ratio & polarity test on a single-phase transformer.
9. To measure power & power factor in a three phase circuit by two wattmeter method.
10. To measure power & power factor in a three phase load using three ammeter & three voltmeter method.

Examination Scheme:

IA				EE	
A	**PR**	**LR**	**V**	**PR**	**V**
5	10	10	5	35	35

Note: IA –Internal Assessment, EE- External Exam, PR- Performance, LR – Lab Record, V – Viva.

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PROGRAMME STRUCTURE

Electronics & Communication Engineering

ENGLISH

Course Code: BCS 101 **Credit Units: 01**

Course Objective:

The course is intended to give a foundation of English Language. The literary texts are indented to help students to inculcate creative & aesthetic sensitivity and critical faculty through comprehension, appreciation and analysis of the prescribed literary texts. It will also help them to respond form different perspectives.

Course Contents:

Module I: Vocabulary
Use of Dictionary
Use of Words: Diminutives, Homonyms & Homophones

Module II: Essentials of Grammar - I
Articles
Parts of Speech
Tenses

Module III: Essentials of Grammar - II
Sentence Structure
Subject -Verb agreement
Punctuation

Module IV: Communication
The process and importance
Principles & benefits of Effective Communication

Module V: Spoken English Communication
Speech Drills
Pronunciation and accent
Stress and Intonation

Module VI: Communication Skills - I
Developing listening skills
Developing speaking skills

Module VII: Communication Skills - II
Developing Reading Skills
Developing writing Skills

Module VIII: Written English communication
Progression of Thought/ideas
Structure of Paragraph
Structure of Essays

Module IX: Short Stories
Of Studies, by Francis Bacon
Dream Children, by Charles Lamb
The Necklace, by Guy de Maupassant
A Shadow, by R.K.Narayan
Glory at Twilight, Bhabani Bhattacharya

Module X: Poems

All the Worlds a Stage	Shakespeare
To Autumn	Keats
O! Captain, My Captain.	Walt Whitman
Where the Mind is Without Fear	Rabindranath Tagore
Psalm of Life	H.W. Longfellow

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PROGRAMME STRUCTURE
Electronics & Communication Engineering

Examination Scheme:

Components	A	CT	HA	EE
Weightage (%)	05	15	10	70

Text & References:

Text

- Madhulika Jha, Echoes, Orient Long Man
- Ramon & Prakash, Business Communication, Oxford.

Reference

Sydney Greenbaum Oxford English Grammar, Oxford.

- Successful Communications, Malra Treece (Allyn and Bacon)
- Effective Technical Communication, M. Ashraf Rizvi.

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PROGRAMME STRUCTURE

Electronics & Communication Engineering

BEHAVIOURAL SCIENCE - I
(UNDERSTANDING SELF FOR EFFECTIVENESS)

Course Code: BSS 104 **Credit Units: 01**

Course Objective:

This course aims at imparting:

- Understanding self & process of self exploration
- Learning strategies for development of a healthy self esteem
- Importance of attitudes and its effective on personality
- Building Emotional Competence

Course Contents:

Module I: Self: Core Competency
Understanding of Self
Components of Self – Self identity
Self concept
Self confidence
Self image

Module II: Techniques of Self Awareness
Exploration through Johari Window
Mapping the key characteristics of self
Framing a charter for self
Stages – self awareness, self acceptance and self realization

Module III: Self Esteem & Effectiveness
Meaning and Importance
Components of self esteem
High and low self esteem
Measuring your self esteem

Module IV: Building Positive Attitude
Meaning and nature of attitude
Components and Types of attitude
Importance and relevance of attitude

Module V: Building Emotional Competence
Emotional Intelligence – Meaning, components, Importance and Relevance
Positive and Negative emotions
Healthy and Unhealthy expression of emotions

Module VI: End-of-Semester Appraisal
Viva based on personal journal
Assessment of Behavioural change as a result of training
Exit Level Rating by Self and Observer

Examination Scheme:

Components	SAP	A	Mid Term Test (CT)	VIVA	Journal for Success (JOS)
Weightage (%)	20	05	20	30	25

Text & References:

Text

- Organizational Behaviour, Davis, K.
- Hoover, Judhith D. Effective Small Group and Team Communication, 2002,Harcourt College Publishers
- Dick, Mc Cann & Margerison, Charles: Team Management, 1992 Edition, viva books
- Bates, A. P. and Julian, J.: Sociology - Understanding Social Behaviour
- Dressler, David and Cans, Donald: The Study of Human Interaction
- Lapiere, Richard. T – Social Change

Reference

- Lindzey, G. and Borgatta, E: Sociometric Measurement in the Handbook of Social Psychology, Addison – Welsley, US.
- Rose, G.: Oxford Textbook of Public Health, Vol.4, 1985.
- LaFasto and Larson: When Teams Work Best, 2001, Response Books (Sage), New Delhi
- J William Pfeiffer (ed.) Theories and Models in Applied Behavioural Science, Vol 2, Group (1996); Pfeiffer & Company
- Smither Robert D.; The Psychology of Work and Human Performance, 1994, Harper Collins College Publishers

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PROGRAMME STRUCTURE

Electronics & Communication Engineering

FRENCH

Course Code: FLT 101 **Credit Units: 02**

Course Objective:

To familiarize the students with the French language

- with the phonetic system
- with the syntax
- with the manners
- with the cultural aspects

Course Contents:

Module A: pp. 01 to 37: Unités 1, 2, Unité 3 Objectif 1, 2
Only grammar of Unité 3: objectif 3, 4 and 5

Contenu lexical: Unité 1 : Découvrir la langue française : (oral et écrit)

1. se présenter, présenter quelqu'un, faire la connaissance des autres, formules de politesse, rencontres
2. dire/interroger si on comprend
3. Nommer les choses

Unité 2: Faire connaissance

1. donner/demander des informations sur une personne, premiers contacts, exprimer ses goûts et ses préférences
2. Parler de soi: parler du travail, de ses activités, de son pays, de sa ville.

Unité 3: Organiser son temps

1. dire la date et l'heure

Contenu grammatical:

1. organisation générale de la grammaire
2. article indéfini, défini, contracté
3. nom, adjectif, masculin, féminin, singulier et pluriel
4. négation avec « de », "moi aussi", "moi non plus"
5. interrogation : Inversion, est-ce que, qui, que, quoi, qu'est-ce que, où, quand, comment, quel(s), quelle(s)
   Interro-négatif : réponses : oui, si, non
6. pronom tonique/disjoint- pour insister après une préposition
7. futur proche

Examination Scheme:

Components	CT1	CT2	C	I	V	A
Weightage (%)	20	20	20	20	15	5

C – Project + Presentation
I – Interaction/Conversation Practice

Text & References:

- le livre à suivre : Campus: Tome 1

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PROGRAMME STRUCTURE
Electronics & Communication Engineering
GERMAN

Course Code: FLG 101 **Credit Units: 02**

Course Objective:
To enable the students to converse, read and write in the language with the help of the basic rules of grammar, which will later help them to strengthen their language.
To give the students an insight into the culture, geography, political situation and economic opportunities available in Germany

Course Contents:

Module I: Introduction
Self introduction: heissen, kommen, wohnwn, lernen, arbeiten, trinken, etc.
All personal pronouns in relation to the verbs taught so far.
Greetings: Guten Morgen!, Guten Tag!, Guten Abend!, Gute Nacht!, Danke sehr!, Danke!, Vielen Dank!, (es tut mir Leid!),
Hallo, wie geht's?: Danke gut!, sehr gut!, prima!, ausgezeichnet!,
Es geht!, nicht so gut!, so la la!, miserabel!

Module II: Interviewspiel
To assimilate the vocabulary learnt so far and to apply the words and phrases in short dialogues in an interview – game for self introduction.

Module III: Phonetics
Sound system of the language with special stress on Dipthongs

Module IV: Countries, nationalities and their languages
To make the students acquainted with the most widely used country names, their nationalitie and the language spoken in that country.

Module V: Articles
The definite and indefinite articles in masculine, feminine and neuter gender. All Vegetables, Fruits, Animals, Furniture, Eatables, modes of Transport

Module VI: Professions
To acquaint the students with professions in both the genders with the help of the verb "sein".

Module VII: Pronouns
Simple possessive pronouns, the use of my, your, etc.
The family members, family Tree with the help of the verb "to have"

Module VIII: Colours
All the color and color related vocabulary – colored, colorful, colorless, pale, light, dark, etc.

Module IX: Numbers and calculations – verb "kosten"
The counting, plural structures and simple calculation like addition, subtraction, multiplication and division to test the knowledge of numbers.
"Wie viel kostet das?"

Module X: Revision list of Question pronouns
W – Questions like who, what, where, when, which, how, how many, how much, etc.

Examination Scheme:

Components	CT1	CT2	C	I	V	A
Weightage (%)	20	20	20	20	15	5

C – Project + Presentation
I – Interaction/Conversation Practice

Text & References:

Text

- Wolfgang Hieber, Lernziel Deutsch
- Hans-Heinrich Wangler, Sprachkurs Deutsch
- Schulz Griesbach, Deutsche Sprachlehre für Ausländer

Reference

- P.L Aneja, Deutsch Interessant- 1, 2 & 3
- Rosa-Maria Dallapiazza et al, Tangram Aktuell A1/1,2
- Braun, Nieder, Schmöe, Deutsch als Fremdsprache 1A, Grundkurs

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PROGRAMME STRUCTURE

Electronics & Communication Engineering

SPANISH

Course Code: FLS 101 **Credit Units: 02**

Course Objective:

To enable students acquire the relevance of the Spanish language in today's global context, how to greet each other. How to present / introduce each other using basic verbs and vocabulary

Course Contents:

Module I

A brief history of Spain, Latin America, the language, the culture…and the relevance of Spanish language in today's global context.
Introduction to alphabets

Module II

Introduction to '*Saludos*' (How to greet each other. How to present / introduce each other).
Goodbyes (despedidas)
The verb *llamarse* and practice of it.

Module III

Concept of Gender and Number
Months of the years, days of the week, seasons. Introduction to numbers 1-100, Colors, Revision of numbers and introduction to ordinal numbers.

Module IV

Introduction to *SER* and *ESTAR* (both of which mean To Be).Revision of '*Saludos*' and '*Llamarse*'. Some adjectives, nationalities, professions, physical/geographical location, the fact that spanish adjectives have to agree with gender and number of their nouns. Exercises highlighting usage of *Ser* and *Estar*.

Module V

Time, demonstrative pronoun (Este/esta, Aquel/aquella etc)

Module VI

Introduction to some key AR /ER/IR ending regular verbs.

Examination Scheme:

Components	CT1	CT2	C	I	V	A
Weightage (%)	20	20	20	20	15	5

C – Project + Presentation
I – Interaction/Conversation Practice

Text & References:

Text

- Español, En Directo I A

Reference

- Español Sin Fronteras

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PROGRAMME STRUCTURE

Electronics & Communication Engineering

CHINESE

Course Code: FLC 101 **Credit Units: 02**

Course Objective:

There are many dialects spoken in China, but the language which will help you through wherever you go is Mandarin, or Putonghua, as it is called in Chinese. The most widely spoken forms of Chinese are Mandarin, Cantonese, Gan, Hakka, Min, Wu and Xiang. The course aims at familiarizing the student with the basic aspects of speaking ability of Mandarin, the language of Mainland China. The course aims at training students in practical skills and nurturing them to interact with a Chinese person.

Course Contents:

Module I
Show pictures, dialogue and retell.
Getting to know each other.
Practicing chart with Initials and Finals. (CHART – The Chinese Phonetic Alphabet Called "Hanyu Pinyin" in Mandarin Chinese.)
Practicing of Tones as it is a tonal language.
Changes in 3rd tone and Neutral Tone.

Module II
Greetings
Let me Introduce
The modal particle "ne".
Use of Please 'qing" – sit, have tea …….. etc.
A brief self introduction – Ni hao ma? Zaijian!
Use of "bu" negative.

Module III
Attributives showing possession
How is your Health? Thank you
Where are you from?
A few Professions like – Engineer, Businessman, Doctor, Teacher, Worker.
Are you busy with your work?
May I know your name?

Module IV
Use of "How many" – People in your family?
Use of "zhe" and "na".
Use of interrogative particle "shenme", "shui", "ma" and "nar".
How to make interrogative sentences ending with "ma".
Structural particle "de".
Use of "Nin" when and where to use and with whom. Use of guixing.
Use of verb "zuo" and how to make sentences with it.

Module V
Family structure and Relations.
Use of "you" – "mei you".
Measure words
Days and Weekdays.
Numbers.
Maps, different languages and Countries.

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PROGRAMME STRUCTURE

Electronics & Communication Engineering

Examination Scheme:

Components	CT1	CT2	C	I	V	A
Weightage (%)	20	20	20	20	15	5

C – Project + Presentation
I – Interaction/Conversation Practice

Text & References:

- "Elementary Chinese Reader Part I" Lesson 1-10

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PROGRAMME STRUCTURE
Electronics & Communication Engineering
APPLIED MATHEMATICS – II

Course Code: AM 201 **Credit Units: 04**

Course Objective:
The knowledge of Mathematics is necessary for a better understanding of almost all the Engineering and Science subjects. Here our intention is to make the students acquainted with the concept of basic topics from Mathematics, which they need to pursue their Engineering degree in different disciplines.

Course Contents:

Module I: Linear Algebra
Hermitian and Skew Hermitian Matrix, Unitary Matrix, Orthogonal Matrix, Elementary Row Transformation, Reduction of a Matrix to Row Echelon Form, Rank of a Matrix, Consistency of Linear Simultaneous Equations, Gauss Elimination Method, Gauss-Jordan Method, Eigen Values and Eigen Vectors of a Matrix, Caley-Hamilton Theorem, Diagonalization of a Matrix, Vector Space, Linear Independence and Dependence of Vectors, Linear Transformations.

Module II: Infinite Series
Definition of Sequence, Bounded Sequence, Limit of a Sequence, Series, Finite and Infinite Series, Convergence and Divergence of Infinite series, Cauchy's Principle of Convergence, Positive Term Infinite Series, Comparison test, D'Alembert's Ratio test. Raabe's Test, Cauchy's nth root Test. Logarithmic Test, Alternating Series, Leibnitz's Test, Absolute and conditioinal convergence, Uniform Convergence, Power Series and its Interval of Convergence.

Module III: Complex Analysis
De Moivre's Theorem and Roots of Complex Numbers, Logarithmic Functions, Circular, Hyperbolic Functions and their Inverses.
Functions of a Complex Variables, Limits, Continuity and Derivatives, Analytic Function, Cauchy-Riemann Equations (without proof), Harmonic Function, Harmonic Conjugates, Conformal Mapping, Bilinear Transformations, Complex Line Integral, Cauchy Integral Theorem, Cauchy Integral Formula, Derivative of Analytic Function, Power Series, Taylor Series, Laurent Series, Zeroes and Singularities, Residues, Residue Theorem, Evaluation of Real Integrals of the Form $\int_0^{2\pi} F(\cos\theta, \sin\theta)\, d\theta$ and $\int_{-\infty}^{\infty} \frac{f(x)}{F(x)}\, dx$.

Module IV: Statistics and Probability
Moments, Skewness, Kurtosis, Random Variables and Probability Distribution, Mean and Variance of a Probability Distribution, Binomial Distribution, Poisson Distribution and Normal Distribution.

Examination Scheme:

Components	A	CT	S/V/Q	HA	EE
Weightage (%)	5	15	5	5	70

CT: Class Test, HA: Home Assignment, S/V/Q: Seminar/Viva/Quiz, EE: End Semester Examination; Att: Attendance

Text & References:

Text
- Engineering Mathematics by Erwin Kreyszig.
- Engineering Mathematics by R.K. Jain and S.R.K. Iyengar.
- Higher Engineering Mathematics by H.K. Dass.

Reference
- Engineering Mathematics by B.S. Grewal.
- Differential Calculus by Shanti Narain.

- Integral Calculus by Shanti Narain.
- Linear Algebra- Schaum Outline Series.

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PROGRAMME STRUCTURE
Electronics & Communication Engineering
APPLIED PHYSICS - II - MODERN PHYSICS

Course Code: AP 202 **Credit Units: 03**

Course Objective:
Aim of this course is to introduce the students to fundamentals of graduate level physics which form the basis of all applied science and engineering

Course Contents:

Module I: Special Theory of Relativity
Michelson-Morley experiment, Importance of negative result, Inertial & non-inertial frames of reference, Einstein's postulates of Special theory of Relativity, Space-time coordinate system, Relativistic Space Time transformation (Lorentz transformation equation), Transformation of velocity, Addition of velocities, Length contraction and Time dilation, Mass-energy equivalence (Einstein's energy mass relation) & Derivation of Variation of mass with velocity,

Module II: Wave Mechanics
Wave particle duality, De-Broglie matter waves, phase and group velocity, Heisenberg uncertainty principle, wave function and its physical interpretation, Operators, expectation values. Time dependent & time independent Schrödinger wave equation for free & bound states, square well potential (rigid wall), Step potential.

Module III: Atomic Physics
Vector atom model, LS and j-j coupling, Zeceman effect (normal & anomalous), Paschen-Bach effect, X-ray spectra and energy level diagram, Moseleys Law, Lasers – Einstein coefficients, conditions for light amplification, population inversion, optical pumping, three level and four level lasers, He-Ne and Ruby laser, Properties and applications of lasers.

Module IV: Solid State Physics
Sommerfield's free electron theory of metals, Fermi energy, Introduction to periodic potential & Kronig-Penny model (Qualitative) Band Theory of Solids, Semi-conductors: Intrinsics and Extrinsic Semiconductors, photoconductivity and photovotaics, Basic aspects of Superconductivity, Meissner effect.

Examination Scheme:

Components	A	CT	S/V/Q	HA	EE
Weightage (%)	5	15	5	5	70

CT: Class Test, HA: Home Assignment, S/V/Q: Seminar/Viva/Quiz, EE: End Semester Examination; Att: Attendance

Text & References:

Text
- Concept of Modern Physics, A. Beiser
- Applied Physics II, Agarawal & Goel

Reference
- Solid State Physics, S. O. Pallai
- Physics of Atom, Wehr & Richards

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PROGRAMME STRUCTURE
Electronics & Communication Engineering

OBJECT ORIENTED PROGRAMMING USING C++

Course Code: BCS 203 **Credit Units: 03**

Course Objective:
The objective of this module is to introduce object oriented programming. To explore and implement the various features of OOP such as inheritance, polymorphism, Exceptional handling using programming language C++. After completing this course student can easily identify the basic difference between the programming approaches like procedural and object oriented.

Course Contents:

Module I: Introduction
Review of C, Difference between C and C++, Procedure Oriented and Object Oriented Approach. Basic Concepts: Objects, classes, Principals like Abstraction, Encapsulation, Inheritance and Polymorphism. Dynamic Binding, Message Passing. Characteristics of Object-Oriented Languages. Introduction to Object-Oriented Modeling techniques (Object, Functional and Dynamic Modeling).

Module II: Classes and Objects
Abstract data types, Object & classes, attributes, methods, C++ class declaration, Local Class and Global Class, State identity and behaviour of an object, Local Object and Global Object, Scope resolution operator, Friend Functions, Inline functions, Constructors and destructors, instantiation of objects, Types of Constructors, Static Class Data, Array of Objects, Constant member functions and Objects, Memory management Operators.

Module III: Inheritance
Inheritance, Types of Inheritance, access modes – public, private & protected, Abstract Classes, Ambiguity resolution using scope resolution operator and Virtual base class, Aggregation, composition vs classification hiérarchies, Overriding inheritance methods, Constructors in derived classes, Nesting of Classes.

Module IV: Polymorphism
Polymorphism, Type of Polymorphism – Compile time and runtime, Function Overloading, Operator Overloading (Unary and Binary) Polymorphism by parameter, Pointer to objects, this pointer, Virtual Functions, pure virtual functions.

Module V: Strings, Files and Exception Handling
Manipulating strings, Streams and files handling, formatted and Unformatted Input output. Exception handling, Generic Programming – function template, class Template Standard Template Library: Standard Template Library, Overview of Standard Template Library, Containers, Algorithms, Iterators, Other STL Elements, The Container Classes, General Theory of Operation, Vectors.

Examination Scheme:

Components	A	CT	S/V/Q	HA	EE
Weightage (%)	5	15	5	5	70

CT: Class Test, HA: Home Assignment, S/V/Q: Seminar/Viva/Quiz, EE: End Semester Examination; Att: Attendance

Text & References:

Text:

- A.R. Venugopal, Rajkumar, T. Ravishanker "Mastering C++", TMH, 1997
- R. Lafore, "Object Oriented Programming using C++", BPB Publications, 2004.
- "Object Oriented Programming with C++" By E. Balagurusamy.
- Schildt Herbert, "C++: The Complete Reference", Wiley DreamTech, 2005.

References:

- Parasons, “Object Oriented Programming with C++”, BPB Publication, 1999.
- Steven C. Lawlor, “The Art of Programming Computer Science with C++”, Vikas Publication, 2002.
- Yashwant Kanethkar, “Object Oriented Programming using C++”, BPB, 2004

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PROGRAMME STRUCTURE
Electronics & Communication Engineering

ENGINEERING MECHANICS

Course Code: BME 204 **Credit Units: 03**

Course Objective:
Objective of this course is to provide fundamental knowledge of force system and its effect on the behaviour of the bodies that may be in dynamic or in static state. It includes the equilibrium of different structures like beams, frames, truss etc and the force transfer mechanism in the different components of a body under given loading condition.

Course Contents:

Module I: Force system & Structure
Free body diagram, Equilibrium equations and applications. Plane truss, perfect and imperfect truss, assumption in the truss analysis, analysis of perfect plane trusses by the method of joints, method of section.

Module II: Friction
Static and Kinetic friction, laws of dry friction, co-efficient of friction, angle of friction, angle of repose, cone of friction, friction lock, efficiency of screw jack, transmission of power through belt

Module III: Distributed Force
Determination of center of gravity, center of mass and centroid by direct integration and by the method of composite bodies, mass moment of inertia and area moment of inertia by direct integration and composite bodies method, radius of gyration, parallel axis theorem, Pappus theorems and its application, polar moment of inertia.

Module IV: Work -Energy
Work energy equation, conservation of energy, Virtual work, impulse, momentum conservation, impact of bodies, co-efficient of restitution, loss of energy during impact, D'alembert principle

Examination Scheme:

Components	A	CT	S/V/Q	HA	EE
Weightage (%)	5	15	5	5	70

CT: Class Test, HA: Home Assignment, S/V/Q: Seminar/Viva/Quiz, EE: End Semester Examination; Att: Attendance

Text & References:

Text
- S.S. Bhavikatti, Engineering Mechanics, New Age International Ltd
- Timoshenko, Engineering Mechanics, McGraw Hill

Reference
- R. S. Khurmi, Engineering Mechanics, S. Chand Publication
- I. H. Shames & G. K. M. Rao, Engineering Mechanics, Pearson Education, 2006

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PROGRAMME STRUCTURE
Electronics & Communication Engineering

ENGINEERING GRAPHICS

Course Code: BME 205 **Credit Units : 01**

Course Contents:

Module 1:
Scales & Curves:Representative factor, Plain Scales, Diagonal Scales, Comperative Scales and Scale of chords. Construction of ellipse, Parabola, Hyperbola, Cycloid, Epicycloid, Hypocycloid, Involutes and Spirals by various methods.

Module 2:
Projection of Points & Straight lines:Projection of points, Projection of straight lines. True inclinations and true length of straight lines.

Module 3:
Projection of planes and solids:Projection of circle, triangle, polygons, polyhedrons, pyramids, cylinders and cones in different positions.

Module 1:
Section of solids and Isometric projections:Section of right solids by normal and inclined planes, Orthographic projection, first angle & third angle projection. Isometric scale, Isometric axes, Isometric projection from orthographic drawing.

Examination Scheme:

Components	A	CT	S/V/Q	HA	EE
Weightage (%)	5	15	5	5	70

CT: Class Test, HA: Home Assignment, S/V/Q: Seminar/Viva/Quiz, EE: End Semester Examination; Att: Attendance

Text & References:

Text
- Engineering Graphics – Basant Agrawal and Dr. C. M. Agrawal, Tata McGraw-Hill Publishing Company Ltd.
- Engineering Drawing – by N. D. Bhatt

Reference
- Engineering Drawing and Graphics – by Veenugopal
- Engineering Drawing – by T. Jeyopoovan

AMITY UNIVERSITY
RAJASTHAN
PROGRAMME STRUCTURE
Electronics & Communication Engineering

ENVIRONMENTAL STUDIES

Course Code: EVS 001 **Credit Units: 04**

Course Objective:

The term environment is used to describe, in the aggregate, all the external forces, influences and conditions, which affect the life, nature, behaviour and the growth, development and maturity of living organisms. At present a great number of environment issues, have grown in size and complexity day by day, threatening the survival of mankind on earth. A study of environmental studies is quite essential in all types of environmental sciences, environmental engineering and industrial management. The objective of environmental studies is to enlighten the masses about the importance of the protection and conservation of our environment and control of human activities which has an adverse effect on the environment.

Course Contents:

Module I: The multidisciplinary nature of environmental studies
Definition, scope and importance
Need for public awareness

Module II: Natural Resources
Renewable and non-renewable resources:
Natural resources and associated problems
Forest resources: Use and over-exploitation, deforestation, case studies. Timber extraction, mining, dams and their effects on forests and tribal people.
Water resources: Use and over-utilization of surface and ground water, floods, drought, conflicts over water, dams-benefits and problems.
Mineral resources: Use and exploitation, environmental effects of extracting and using mineral resources, case studies.
Food resources: World food problems, changes caused by agriculture and overgrazing, effects of modern agriculture, fertilizer-pesticide problems, water logging, salinity, case studies.
Energy resources: Growing energy needs, renewable and non-renewable energy sources, use of alternate energy sources, case studies.
Land resources: Land as a resource, land degradation, man induced landslides, soil erosion and desertification.

- Role of an individual in conservation of natural resources.
- Equitable use of resources for sustainable lifestyles.

Module III: Ecosystems
Concept of an ecosystem
Structure and function of an ecosystem
Producers, consumers and decomposers
Energy flow in the ecosystem
Ecological succession
Food chains, food webs and ecological pyramids
Introduction, types, characteristic features, structure and function of the following ecosystem:

a. Forest ecosystem
b. Grassland ecosystem
c. Desert ecosystem

d. Aquatic ecosystems (ponds, streams, lakes, rivers, ocean estuaries)

Module IV: Biodiversity and its conservation
Introduction – Definition: genetic, species and ecosystem diversity
Biogeographical classification of India
Value of biodiversity: consumptive use, productive use, social, ethical aesthetic and option values
Biodiversity at global, national and local levels
India as a mega-diversity nation
Hot-spots of biodiversity
Threats to biodiversity: habitat loss, poaching of wildlife, man wildlife conflicts
Endangered and endemic species of India
Conservation of biodiversity: In-situ and Ex-situ conservation of biodiversity

Module V: 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 pollution

Solid waste management: Causes, effects and control measures of urban and industrial wastes.
Role of an individual in prevention of pollution.
Pollution case studies.
Disaster management: floods, earthquake, cyclone and landslides.

Module VI: Social Issues and the Environment
From unsustainable to sustainable development
Urban problems and related to energy
Water conservation, rain water harvesting, watershed management
Resettlement and rehabilitation of people; its problems and concerns. Case studies.
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
Environmental Protection Act
Air (Prevention and Control of Pollution) Act
Water (Prevention and control of Pollution) Act
Wildlife Protection Act
Forest Conservation Act
Issues involved in enforcement of environmental legislation
Public awareness

Module VII: Human Population and the Environment
Population growth, variation among nations
Population explosion – Family Welfare Programmes
Environment and human health
Human Rights
Value Education
HIV / AIDS
Women and Child Welfare
Role of Information Technology in Environment and Human Health
Case Studies

Module VIII: Field Work
Visit to a local area to document environmental assets-river / forest/ grassland/ hill/ mountain.

Visit to a local polluted site – Urban / Rural / Industrial / Agricultural
Study of common plants, insects, birds
Study of simple ecosystems-pond, river, hill slopes, etc (Field work equal to 5 lecture hours)

Examination Scheme:

Components	A	CT	S/V/Q	HA	EE
Weightage (%)	5	30	5	10	50

Text & References:

Text

- Agarwal, K.C. 2001 Environmental Biology, Nidi Publ. Ltd. Bikaner.
- Bharucha Erach, The Biodiversity of India, Mapin Publishing Pvt. Ltd., Ahmedabad 380 013, India
- Brunner R.C., 1989, Hazardous Waste Incineration, McGraw Hill Inc. 480p
- Clark R.S., Marine Pollution, Clanderson Press Oxford (TB)
- Cunningham, W.P. Cooper, T.H. Gorhani, E & Hepworth, M.T. 2001, Environmental Encyclopedia, Jaico Publ. House, Mumabai, 1196p
- De A.K., Environmental Chemistry, Wiley Eastern Ltd.
- Down to Earth, Centre for Science and Environment (R)
- Gleick, H.P. 1993. Water in Crisis, Pacific Institute for Studies in Dev., Environment & Security. Stockholm Env. Institute Oxford Univ. Press. 473p
- Hawkins R.E., Encyclopedia of Indian Natural History, Bombay Natural History Society, Bombay (R)
- Heywood, V.H & Waston, R.T. 1995. Global Biodiversity Assessment. Cambridge Univ. Press 1140p.
- Jadhav, H & Bhosale, V.M. 1995. Environmental Protection and Laws. Himalaya Pub. House, Delhi 284 p.
- Mckinney, M.L. & School, R.M. 1996. Environmental Science Systems & Solutions, Web enhanced edition. 639p.

Reference

- Mhaskar A.K., Matter Hazardous, Techno-Science Publication (TB)
- Miller T.G. Jr. Environmental Science, Wadsworth Publishing Co. (TB)
- Odum, E.P. 1971. Fundamentals of Ecology. W.B. Saunders Co. USA, 574p
- Rao M N. & Datta, A.K. 1987. Waste Water treatment. Oxford & IBH Publ. Co. Pvt. Ltd. 345p.
- Sharma B.K., 2001. Environmental Chemistry. Geol Publ. House, Meerut
- Survey of the Environment, The Hindu (M)
- Townsend C., Harper J, and Michael Begon, Essentials of Ecology, Blackwell Science
- Trivedi R.K., Handbook of Environmental Laws, Rules Guidelines, Compliances and Standards, Vol I and II, Enviro Media (R)
- Trivedi R. K. and P.K. Goel, Introduction to air pollution, Techno-Science Publication (TB)
- Wanger K.D., 1998 Environnemental Management. W.B. Saunders Co. Philadelphia, USA 499p

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PROGRAMME STRUCTURE
Electronics & Communication Engineering

APPLIED PHYSICS LAB – II- MODERN PHYSICS LAB

Course Code: AP 222 **Credit Units: 01**

List of Experiments:

1. To determine the wavelength of prominent lines of mercury spectrum using plane transmission grating.
2. To determine the thickness of a given wire by Wedge method.
3. To determine the wavelength of He-Ne laser light using single slit.
4. To determine the frequency of an electrically maintained tunning fork by Melde's method.
5. To study the variation of magnetic field along the axis of Helmholtz coil and to find out reduction factor.
6. To draw the V – I characteristics of a forward and reverse bias PN junction diode.
7. To determine the frequency of AC mains using sonometer.
8. To determine the energy band-gap of Germanium crystal using four probes method.
9. To draw V – I characteristics of a photocell and to verify the inverse square law of radiation.
10. To determine the acceleration due to gravity ('g') using Keter's reversible pendulum.
11. To study the characteristics of photo voltaic cell (solar cell).

Examination Scheme:

IA				EE	
A	**PR**	**LR**	**V**	**PR**	**V**
5	10	10	5	35	35

Note: IA –Internal Assessment, EE- External Exam, PR- Performance, LR – Lab Record, V – Viva.

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PROGRAMME STRUCTURE

Electronics & Communication Engineering

OBJECT ORIENTED PROGRAMMING USING C++ LAB

Course Code: BCS 223 **Credit Units: 01**

Software Required: Turbo C++

List of Experiments:

- Creation of objects in programs and solving problems through them.
- Different use of private, public member variables and functions and friend functions.
- Use of constructors and destructors.
- Operator overloading
- Use of inheritance in and accessing objects of different derived classes.
- Polymorphism and virtual functions (using pointers).
- File handling.

Examination Scheme:

IA				EE	
A	**PR**	**LR**	**V**	**PR**	**V**
5	10	10	5	35	35

Note: IA –Internal Assessment, EE- External Exam, PR- Performance, LR – Lab Record, V – Viva.

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PROGRAMME STRUCTURE

Electronics & Communication Engineering

ENGINEERING MECHANICS LAB

Course Code: BME 224 **Credit Units: 01**

List of Experiments:

- To verify the law of Force Polygon
- To verify the law of Moments using Parallel Force apparatus. (Simply supported type)
- To determine the co-efficient of friction between wood and various surface (like
- Leather, Wood, Aluminum) on an inclined plane.
- To find the forces in the members of Jib Crane.
- To determine the mechanical advantage, Velocity ratio and efficiency of a screw jack.
- To determine the mechanical advantage, Velocity ratio and Mechanical efficiency of the Wheel and Axle
- To determine the MA, VR, η of Worm Wheel (2-start)
- Verification of force transmitted by members of given truss.
- To verify the law of moments using Bell crank lever
- To find CG and moment of Inertia of an irregular body using Computation method

Examination Scheme:

IA				EE	
A	**PR**	**LR**	**V**	**PR**	**V**
5	10	10	5	35	35

Note: IA –Internal Assessment, EE- External Exam, PR- Performance, LR – Lab Record, V – Viva.

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PROGRAMME STRUCTURE

Electronics & Communication Engineering

ENGINEERING GRAPHICS LAB

Course Code: **BME 225** **Credit Units: 01**

List of Experiments:

- Sketching and drawing of scale & Curve.
- Sketching and drawing of Cycloidal Curve.
- Sketching and drawing of Involute & Spirals.
- Sketching and drawing of points & line.
- Sketching and drawing of projection of planes.
- Sketching and drawing of projection of solids.
- Sketching and drawing of intersection of surfaces.
- Sketching and drawing of development of surfaces.
- Sketching and drawing of orthographic and isometric projection.

Examination Scheme:

IA				EE	
A	**PR**	**LR**	**V**	**PR**	**V**
5	10	10	5	35	35

Note: IA –Internal Assessment, EE- External Exam, PR- Performance, LR – Lab Record, V – Viva.

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PROGRAMME STRUCTURE
Electronics & Communication Engineering

ENGLISH

Course Code: BCS 201 **Credit Units: 01**

Course Objective:
The course is intended to give a foundation of English Language. The literary texts are indented to help students to inculcate creative & aesthetic sensitivity and critical faculty through comprehension, appreciation and analysis of the prescribed literary texts. It will also help them to respond form different perspectives.

Course Contents:

Module I: Vocabulary
Use of Dictionary
Use of Words: Diminutives, Homonyms & Homophones

Module II: Essentials of Grammar - I
Articles
Parts of Speech
Tenses

Module III: Essentials of Grammar - II
Sentence Structure
Subject -Verb agreement
Punctuation

Module IV: Communication
The process and importance
Principles & benefits of Effective Communication

Module V: Spoken English Communication
Speech Drills
Pronunciation and accent
Stress and Intonation

Module VI: Communication Skills - I
Developing listening skills
Developing speaking skills

Module VII: Communication Skills - II
Developing Reading Skills
Developing writing Skills

Module VIII: Written English communication
Progression of Thought/ideas
Structure of Paragraph
Structure of Essays

Module IX: Short Stories
Of Studies, by Francis Bacon
Dream Children, by Charles Lamb
The Necklace, by Guy de Maupassant
A Shadow, by R.K.Narayan
Glory at Twilight, Bhabani Bhattacharya

Module X: Poems

All the Worlds a Stage	Shakespeare
To Autumn	Keats
O! Captain, My Captain.	Walt Whitman
Where the Mind is Without Fear	Rabindranath Tagore
Psalm of Life	H.W. Longfellow

Examination Scheme:

Components	A	CT	HA	EE
Weightage (%)	05	15	10	70

Text & References:

Text

- Madhulika Jha, Echoes, Orient Long Man
- Ramon & Prakash, Business Communication, Oxford.

Reference

- Sydney Greenbaum Oxford English Grammar, Oxford.
- Successful Communications, Malra Treece (Allyn and Bacon)
- Effective Technical Communication, M. Ashraf Rizvi.

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Electronics & Communication Engineering

BEHAVIOURAL SCIENCE - II
(PROBLEM SOLVING AND CREATIVE THINKING)

Course Code: BSS 204 **Credit Units: 01**

Course Objective:

To enable the students:

- Understand the process of problem solving and creative thinking.
- Facilitation and enhancement of skills required for decision-making.

Course Contents:

Module I: Thinking as a tool for Problem Solving
What is thinking: The Mind/Brain/Behaviour
Critical Thinking and Learning:
Making Predictions and Reasoning
Memory and Critical Thinking
Emotions and Critical Thinking
Thinking skills

Module II: Hindrances to Problem Solving Process
Perception
Expression
Emotion
Intellect
Work environment

Module III: Problem Solving
Recognizing and Defining a problem
Analyzing the problem (potential causes)
Developing possible alternatives
Evaluating Solutions
Resolution of problem
Implementation
Barriers to problem solving:
Perception
Expression
Emotion
Intellect
Work environment

Module IV: Plan of Action
Construction of POA
Monitoring
Reviewing and analyzing the outcome

Module V: Creative Thinking
Definition and meaning of creativity
The nature of creative thinking
Convergent and Divergent thinking
Idea generation and evaluation (Brain Storming)
Image generation and evaluation
Debating
The six-phase model of Creative Thinking: ICEDIP model

Module VI: End-of-Semester Appraisal
Viva based on personal journal

Assessment of Behavioural change as a result of training
Exit Level Rating by Self and Observer

Examination Scheme:

Components	SAP	A	Mid Term Test (CT)	VIVA	Journal for Success (JOS)
Weightage (%)	20	05	20	30	25

Text & References:

Text

- Michael Steven: How to be a better problem solver, Kogan Page, New Delhi, 1999
- Geoff Petty: How to be better at creativity; Kogan Page, New Delhi, 1999
- Richard Y. Chang and P. Keith, Kelly: Wheeler Publishing, New Delhi, 1998.
- Phil Lowe Koge Page: Creativity and Problem Solving, New Delhi, 1996

Reference

- J William Pfeiffer (ed.) Theories and Models in Applied Behavioural Science, Vol 3, Management (1996); Pfeiffer & Company
- Bensley, Alan D.: Critical Thinking in Psychology – A Unified Skills Approach, (1998), Brooks/Cole Publishing Company.

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PROGRAMME STRUCTURE

Electronics & Communication Engineering

FRENCH

Course Code: FLT 201 **Credit Units: 02**

Course Objective:

To enable the students to overcome the fear of speaking a foreign language and take position as a foreigner speaking French.

To make them learn the basic rules of French Grammar.

Course Contents:

Module A: pp.38 – 47: Unité 3 : Objectif 3, 4, 5. 6

Module B: pp. 47 to 75 Unité 4, 5

Contenu lexical:

Unité 3: Organiser son temps

1. donner/demander des informations sur un emploi du temps, un horaire SNCF – Imaginer un dialogue
2. rédiger un message/ une lettre pour …
   i) prendre un rendez-vous/ accepter et confirmer/ annuler
   ii) inviter/accepter/refuser
3. Faire un programme d'activités
   imaginer une conversation téléphonique/un dialogue
   Propositions- interroger, répondre

Unité 4: Découvrir son environnement

1. situer un lieu
2. s'orienter, s'informer sur un itinéraire.
3. Chercher, décrire un logement
4. connaître les rythmes de la vie

Unité 5 : s'informer

1. demander/donner des informations sur un emploi du temps passé.
2. donner une explication, exprimer le doute ou la certitude.
3. découvrir les relations entre les mots
4. savoir s'informer

Contenu grammatical:

1. Adjectifs démonstratifs
2. Adjectifs possessifs/exprimer la possession à l'aide de : i. « de » ii. A+nom/pronom disjoint
3. Conjugaison pronominale – négative, interrogative - construction à l'infinitif
4. Impératif/exprimer l'obligation/l'interdiction à l'aide de « il faut…. »/ «il ne faut pas… »
5. passé composé
6. Questions directes/indirectes

Examination Scheme:

Components	CT1	CT2	C	I	V	A
Weightage (%)	20	20	20	20	15	5

C – Project + Presentation
I – Interaction/Conversation Practice

Text & References:

- le livre à suivre : Campus: Tome 1

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PROGRAMME STRUCTURE
Electronics & Communication Engineering
GERMAN

Course Code: FLG 201 **Credit Units: 02**

Course Objective:
To enable the students to converse, read and write in the language with the help of the basic rules of grammar, which will later help them to strengthen their language.
To give the students an insight into the culture, geography, political situation and economic opportunities available in Germany. Introduction to Grammar to consolidate the language base learnt in Semester I

Course Contents:

Module I: Everything about Time and Time periods
Time and times of the day.
Weekdays, months, seasons.
Adverbs of time and time related prepositions

Module II: Irregular verbs
Introduction to irregular verbs like to be, and others, to learn the conjugations of the same, (fahren, essen, lessen, schlafen, sprechen und ähnliche).

Module III: Separable verbs
To comprehend the change in meaning that the verbs undergo when used as such
Treatment of such verbs with separable prefixes

Module IV: Reading and comprehension
Reading and deciphering railway schedules/school time table
Usage of separable verbs in the above context

Module V: Accusative case
Accusative case with the relevant articles
Introduction to 2 different kinds of sentences – Nominative and Accusative

Module VI: Accusative personal pronouns
Nominative and accusative in comparison
Emphasizing on the universal applicability of the pronouns to both persons and objects

Module VII: Accusative prepositions
Accusative propositions with their use
Both theoretical and figurative use

Module VIII: Dialogues
Dialogue reading: 'In the market place'
'At the Hotel'

Examination Scheme:

Components	CT1	CT2	C	I	V	A
Weightage (%)	20	20	20	20	15	5

C – Project + Presentation
I – Interaction/Conversation Practice

Text & References:

- Wolfgang Hieber, Lernziel Deutsch
- Hans-Heinrich Wangler, Sprachkurs Deutsch

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- Schulz Griesbach, Deutsche Sprachlehre für Ausländer
- P.L Aneja, Deutsch Interessant- 1, 2 & 3
- Rosa-Maria Dallapiazza et al, Tangram Aktuell A1/1,2
- Braun, Nieder, Schmöe, Deutsch als Fremdsprache 1A, Grundkurs

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SPANISH

Course Code: FLS 201 **Credit Units: 02**

Course Objective:

To enable students acquire more vocabulary, grammar, Verbal Phrases to understand simple texts and start describing any person or object in Simple Present Tense.

Course Contents:

Module I
Revision of earlier modules.

Module II
Some more AR/ER/IR verbs. Introduction to root changing and irregular AR/ER/IR ending verbs

Module III
More verbal phrases (eg, Dios Mio, Que lastima etc), adverbs *(bueno/malo, muy, mucho, bastante, poco).*
Simple texts based on grammar and vocabulary done in earlier modules.

Module IV
Possessive pronouns

Module V
Writing/speaking essays like my friend, my house, my school/institution, myself….descriptions of people, objects etc, computer/internet related vocabulary

Examination Scheme:

Components	CT1	CT2	C	I	V	A
Weightage (%)	20	20	20	20	15	5

C – Project + Presentation
I – Interaction/Conversation Practice

Text & References:

- Español, En Directo I A
- Español Sin Fronteras

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CHINESE

Course Code: FLC 201 **Credit Units: 02**

Course Objective:

Chinese is a tonal language where each syllable in isolation has its definite tone (flat, falling, rising and rising/falling), and same syllables with different tones mean different things. When you say, "ma" with a third tone, it mean horse and "ma" with the first tone is Mother. The course aims at familiarizing the student with the basic aspects of speaking ability of Mandarin, the language of Mainland China. The course aims at training students in practical skills and nurturing them to interact with a Chinese person.

Course Contents:

Module I
Drills
Practice reading aloud
Observe Picture and answer the question.
Tone practice.
Practice using the language both by speaking and by taking notes.
Introduction of basic sentence patterns.
Measure words.
Glad to meet you.

Module II
Where do you live?
Learning different colors.
Tones of "bu"
Buying things and how muchit costs?
Dialogue on change of Money.
More sentence patterns on Days and Weekdays.
How to tell time. Saying the units of time in Chinese. Learning to say useful phrases like – 8:00, 11:25, 10:30 P.M. everyday, afternoon, evening, night, morning 3:58, one hour, to begin, to end ….. etc.
Morning, Afternoon, Evening, Night.

Module III
Use of words of location like-li, wais hang, xia
Furniture – table, chair, bed, bookshelf,.. etc.
Description of room, house or hostel room.. eg what is placed where and how many things are there in it?
Review Lessons – Preview Lessons.
Expression 'yao", "xiang" and "yaoshi" (if).
Days of week, months in a year etc.
I am learning Chinese. Is Chinese difficult?

Module IV
Counting from 1-1000
Use of "chang-chang".
Making an Inquiry – What time is it now? Where is the Post Office?
Days of the week. Months in a year.
Use of Preposition – "zai", "gen".
Use of interrogative pronoun – "duoshao" and "ji".
"Whose"??? Sweater etc is it?
Different Games and going out for exercise in the morning.

Module V
The verb "qu"
- Going to the library issuing a book from the library
- Going to the cinema hall, buying tickets
- Going to the post office, buying stamps
- Going to the market to buy things.. etc

– Going to the buy clothes …. Etc.
Hobby. I also like swimming.
Comprehension and answer questions based on it.

Examination Scheme:

Components	CT1	CT2	C	I	V	A
Weightage (%)	20	20	20	20	15	5

C – Project + Presentation
I – Interaction/Conversation Practice

Text & References:

- "Elementary Chinese Reader Part I" Lesson 11-20

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PROGRAMME STRUCTURE

Electronics & Communication Engineering

APPLIED MATHEMATICS – III

Course Code: AM 301 **Credit Units: 03**

Course Objective:

The knowledge of Mathematics is necessary for a better understanding of almost all the Engineering and Science subjects. Here our intention is to make the students acquainted with the concept of basic topics from Mathematics, which they need to pursue their Engineering degree in different disciplines.

Course Contents:

Module I: Partial Differential Equations

Formation of PDE, Equations solvable by direct integration, Linear equations of the first order, Non-linear equations of the first order, Charpit's method, Homogeneous linear equations with constant coefficients, Non homogeneous linear equations.

Module II: Fourier Series

Periodic Functions, Fourier Series, Functions having points of discontinuity, Even or Odd Functions, Change of Interval, Half-range series, Parseval's Formula, Complex form of Fourier series, Practical Harmonic Analysis, Fourier Transforms, Sine and Cosine Transforms.

Module III: Laplace Transformation

Definition, Transforms of elementary functions, Properties of Laplace transforms, Existence conditions, Transforms of derivatives, Transforms of integrals, Evaluation of integrals by Laplace transform, Inverse transforms, Other methods of finding inverse transforms, Convolution theorem, Application to differential equations, Simultaneous linear equations with constant coefficients, Unit step functions, Periodic functions.

Module IV: Linear Programming

Formulation of the problem, Graphical method, Canonical and Standard forms of L.P.P. Simplex Method, Artificial variable Techniques-M-method, Two phase method, Degeneracy, Dual simplex method.

Examination Scheme:

Components	A	CT	S/V/Q	HA	EE
Weightage (%)	5	15	5	5	70

CT: Class Test, HA: Home Assignment, S/V/Q: Seminar/Viva/Quiz, EE: End Semester Examination; Att: Attendance

Text & References:

Text:

- Differential Calculus by Shanti Narain
- Integral Calculus by Shanti Narain
- Higher Engineering Mathematics by B.S. Grewal

Reference:

- Differential Equations by A.R. Forsyth
- Higher Engineering Mathematics by H.K. Dass
- Partial Differential Equations by I.N. Snedon

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ANALOG ELECTRONICS – I

Course Code: BEC 302 **Credit Units: 04**

Course Objective:
This course builds from basic knowledge of Semiconductor Physics to an understanding of basic devices and their models. This course builds a foundation for courses on VLSI design and analog CMOS IC Design.

Course Contents:

Module I: Semiconductor Diode and Diode Circuits
Different types of diodes: Zener, Schottky, LED. Zener as voltage regulator, Diffusion capacitance, Drift capacitance, the load line concept, half wave, full wave rectifiers, clipping and clamping circuits.

Module II: Bipolar Junction Transistor
Bipolar junction transistor: Introduction, Transistor, construction, transistor operations, BJT characteristics, load line, operating point, leakage currents, saturation and cut off mode of operations. Bias stabilization: Need for stabilization, fixed Bias, emitter bias, self bias, bias stability with respect to variations in $I_{co,}$ V_{BE} & β, Stabilization factors, thermal stability.

Module III: Small signal Analysis of transistor and Multistage Amplifier
Hybrid model for transistors at low frequencies, Analysis of transistor amplifier using h parameters, emitter follower, Miller's theorem, THE CE amplifier with an emitter resistance, Hybrid π model, Hybrid π Conducatnces and Capacitances, CE short circuit current gain, CE short circuit current gain with R_L Multistage amplifier: Cascading of Amplifiers, Coupling schemes(RC coupling and Transformer coupling)

Module IV: Field Effect Transistors
Field effect transistor (JFET, MOSFET): volt-ampere characteristics, small signal model –common drain, common source, common gate, operating point, MOSFET, enhancement and -depletion mode, Common source amplifier, Source follower

Module V: Feedback Amplifiers
Feedback concept, Classification of Feedback amplifiers, Properties of negative Feedback amplifiers, Impedance considerations in different Configurations, Examples of analysis of feedback Amplifiers.

Module VI: Power amplifiers
Power dissipation in transistors, difference with voltage amplifiers, Amplifier classification (Class A, Class B, Class C, Class AB) class AB push pull amplifier, collector efficiency of each, cross over distortion.

Examination Scheme:

Components	A	CT	S/V/Q	HA	EE
Weightage (%)	5	15	5	5	70

CT: Class Test, HA: Home Assignment, S/V/Q: Seminar/Viva/Quiz, EE: End Semester Examination; Att: Attendance

Text & References:

Text
- Robert F. Pierret: Semiconductor Device Fundamentals, Pearson Education.

Reference
- Millman and Halkias: Electronic Devices and circuits, Tata McGraw.
- Boylestad: Electronic Devices and Circuits, Pearson Education.

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CIRCUITS AND SYSTEMS

Course Code: BEC 303 **Credit Units: 04**

Course Objective:
The course intends to make the students proficient in analyzing circuits. At the completion of the course, the student should be able to construct and interpret block diagrams and signal flow graphs of control systems and to use basic methods of determining their stability.

Course Contents:

Module I: Graph Theory and Network equations
Graph of a network, Trees, Co-trees and loops, Cut set matrix, Tie set matrix, number of possible trees of a graph, duality, Loop Analysis and Node Analysis.

Module II: Analysis of circuits using classical Method
Time and Frequency domain analysis of RL, RC and RLC circuits, Linear constant coefficient differential equation.

Module III: Signals and Laplace Transforms
Unit step signal, Ramp signal, impulse signal, Laplace transformations and its properties, Gate function, Inverse Laplace transformations, Application of Laplace Transforms in circuit analysis.

Module IV: Network Theorems
Reciprocity theorem, Superposition theorem, Thevenin's and Norton's theorems, Millman's theorem, Maximum power transfer theorem, Compensation theorem, Tellegan's theorem.

Module V: Two port Network & Network Functions
Introduction, two port z-, y-, T-, h-parameters, Inter-relations among parameters, Condition for reciprocity and symmetry, Interconnections of two port networks, Driving point and transfer functions, Poles, Zeros and necessary condition for driving point and transfer function,.

Module VI: Network Synthesis
Hurwitz polynomial, Positive real functions, synthesis of LC, RC, RL immittance functions.

Examination Scheme:

Components	A	CT	S/V/Q	HA	EE
Weightage (%)	5	15	5	5	70

CT: Class Test, HA: Home Assignment, S/V/Q: Seminar/Viva/Quiz, EE: End Semester Examination; Att: Attendance

Text & References:

Text:
- M.E. Valkenburg, "Network analysis", PHI.
- D. R. Choudhary, "Networks and Systems", New Age International.
- K.M. Soni, 2009, "Circuits and Systems", VIII Edition, S.K. Kataria & Sons Delhi.

References:

- Bhise, Chadda, Kulshreshtha, "Engineering network analysis and filter design", Umesh Publication.
- F.F. Kuo, "Network Analysis and Synthesis", Wiley India Pvt. Ltd.

SIGNALS AND SYSTEMS

Course Code: BEC 304 **Credit Units: 03**

Course Objective:

The objective of the course is to provide knowledge of Signals and Systems to students of ECE. This Course includes good insight of types of signals and types of systems, various operations performed on them through the use of Fourier series, Fourier transform, z transform.

Course Contents:

Module I: Signals and Systems
Introduction of signals and systems; classification of signal, continuous time and discrete time signals, operations performed on them, even and odd signals, periodic and non periodic signals, deterministic and random signals, energy signals, power signals, elementary signals: impulse, step, ramp and exponentials, classification of systems.

Module II: LTI system
Response of LTI system for continuous and discrete time systems, Impulse response, Step response, properties of continuous LTI and discrete LTI systems, LTI systems described by differential and difference equation, analysis of LTI Systems, interconnection of systems.

Module III: Fourier series
Representation of continuous time periodic signal, properties of continuous time Fourier series, representation of discrete time periodic signals, convergence of the Fourier series, properties of discrete time Fourier series, Fourier series and LTI systems.

Module IV: Fourier Transform
Continuous time Fourier transform, properties of continuous time Fourier transform, discrete time Fourier transform, properties of discrete time Fourier transform; applications; Bandwidth determination of signals and systems.

Module V: z-Transform
Definition of z-transform, region of convergence, properties of z-transform, first order system, second order system, inverse z-transform, analysis of LTI system using z-transform.

Examination Scheme:

Components	A	CT	S/V/Q	HA	EE
Weightage (%)	5	15	5	5	70

CT: Class Test, HA: Home Assignment, S/V/Q: Seminar/Viva/Quiz, EE: End Semester Examination; Att: Attendance

Text & References

Text:

- Alan.V Oppenheim, Signals and Systems, 4th Edition 2007, Pearson Prentice Hall Publication.
- K.M. Soni, Signals and Systems; 3rd Edition, S.K. Kataria & Sons Publication.
- P.Ramesh Babu, Signal and Systems, 3rd Edition, Scitech Publications (INDIA) Pvt. Ltd.

References:

- Simon Haykin, Signals and Systems, 2nd Edition, Willy Publications.
- B.P.Lathi, Linear Systems & Signals, 2nd Edition, Oxford Publication.
- Roberts, Fundamentals of Signals and Systems, TMH Publication.

JAVA PROGRAMMING

Course Code: BEC 305 Credit Units: 03

Course Objective:

The objective is to impart programming skills used in this object oriented language java.
The course explores all the basic concepts of core java programming. The students are expected to learn it enough so that they can develop the web solutions like creating applets etc.

Course Contents:

Module I

Concepts of OOP, Features of Java, How Java is different from C++, Data types, Control Statements, identifiers, arrays, operators. Inheritance: Multilevel hierarchy, method overriding, Abstract classes, Final classes, String Class.

Module II

Defining, Implementing, Applying Packages and Interfaces, Importing Packages. Fundamentals, Types, Uncaught Exceptions, Multiple catch Clauses, Java's Built-in Exception.

Module III

Creating, Implementing and Extending thread, thread priorities, synchronization suspending, resuming and stopping Threads, Constructors, Various Types of String Operations. Exploring Various Basic Packages of Java: Java. lang, Java. util, Java.i.o

Module IV
Event handling Mechanism, Event Model, Event Classes, Sources of Events, Event Listener Interfaces
AWT: Working with Windows, AWT Controls, Layout Managers

Module V
Applet Class, Architecture, Skeleton, Display Methods.
Swings: Japplet, Icons, labels, Text Fields, Buttons, Combo Boxes.

Examination Scheme:

Components	A	CT	S/V/Q	HA	EE
Weightage (%)	5	15	5	5	70

CT: Class Test, HA: Home Assignment, S/V/Q: Seminar/Viva/Quiz, EE: End Semester Examination; Att: Attendance

Text & References:

Text:

- JAVA The Complete Reference by PATRICK NAUGHTON & HERBERT SCHILD, TMH
- Introduction to JAVA Programming a primar, Balaguruswamy.

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References:

- "Introduction to JAVA Programming" Daniel/Young PHI
- Jeff Frentzen and Sobotka, "Java Script", Tata McGraw Hill,1999

ELECTROMAGNETIC PROPERTIES OF MATERIALS

Course Code: BEC 306 **Credit Units: 03**

Course Objectives: The course aims at to introduce the behaviour of materials in external electric and magnetic field to the students.

Module I: Introduction:
Interaction of free electrons with lattice, Brillouin zones, Nearly free electron model, Tight binding and other electronic structure models.

Module II:Conducting Materials:
Electrical resistivity of metals and alloys, Mattheissen rule, Nordheims Rule, Kondo effect, Ionic and superionic conductors, Properties and their applications.

Module III:Dielectric and Insulating Materials:
Polarization, ClausiusMosotti equation, Dielectric permittivity and loss, Dielectric break down in materials, High K dielectric materials, Non-linear dielectrics, Ferroelectricity, Piezoelectricity, Pyroelectricity, Actuators and Smart materials.

Module IV : **Magnetic Materials:**
Classification, Ferromagnetism and Exchange interactions, Ferromagnetic domains, Magnetic anisotropy, Magnetic behaviour of polycrystalline materials, Hard and soft magnetic metallic and Intermetallic materials and their characteristics, Their properties and applications, Magnetism and superconductivity, Magnetostriction.

Examination Scheme:

Components	A	CT	S/V/Q	HA	EE
Weightage (%)	5	15	5	5	70

CT: Class Test, HA: Home Assignment, S/V/Q: Seminar/Viva/Quiz, EE: End Semester Examination; Att: Attendance

Text & References

Text:

1. Kittel, C, Introduction to Solid State Physics, John Wiley & Sons, Inc., (1996).
2. Ashcroft, N.W., and Mermin, N.D., Solid State Physics, Thomson, (2007).

References:

1. L. Solymar and Walsh, Lectures on Electrical Properties of Materials, Oxford University Press, (2004)
2. Hummel, R.E., Electronic Properties of Materials, Springer Verlag, (2004).

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MEASUREMENTS & INSTRUMENTATION

Course Code: BEC 307 **Credit Units: 03**

Course Objective:

This course deals with the systematic study of the electrical and electronics measurements, their basic features and types. This also describe the basic fundamental for characterizing all possible types of electrical and electronics measurements.

Module I : Basics of Measurement Systems:
General concepts and terminology of measurement systems, Basic characteristics of measuring devices, standards and calibration, Accuracy, Precision, Sensitivity, Resolution, Linearity & Errors in measurement.

Module II : PMMC Instruments:
PMMC meters- construction, torque equation, ammeter shunts, multirange ammeter, voltmeter multiplier, sensitivity, ohmmeters, multimeters; Construction & general equation of moving iron, electrodynamometer, hot wire instruments,

Module III: Measurement of Resistance, Inductance and Capacitance:
D.C. Bridges: Wheatstone's bridge, Sensitivity & Limitations; Carey Foster Bridge; Kelvin double bridge; Megaohm Bridge. A.C. Bridges: Maxwell's inductance Capacitance Bridge; Andersons Bridge; De Sauty's Bridge; Schering Bridge.

Module IV: Component Measuring Instruments:
Q meter, Vector Impedance meter, RF Power & Voltage Measurements, Introduction to shielding & grounding & Noise problem.

Module V: Cathode Ray Oscillioscope:
CRT Construction, Basic CRO circuits, CRO Probes, Basic functioning, Techniques of Measurement of Voltage, Current, Phase Angle and Frequency, , Multibeam, multi trace, storage & sampling Oscilloscopes.

EXAMINATION SCHEME:

Components	A	CT	S/V/Q	HA	EE
Weightage (%)	5	15	5	5	70

A: Attendance, CT: Class Test, S/V/Q: Seminar/Viva/Quiz, HA: Home Assignment, EE: End Semester Examination

Text & Reference books:

Text:

- A Course In Electrical & Electronic Measurement & Instrumentation, A.K.Sawhney, Dhanpat Rai

Reference

- Introduction To Measurements And Instrumentation, Arun K. Ghosh, PHI
- Electronic Measurements & Instrumentation, Bernard Oliver, John Cage, TMH

- Elements Of Electronic Instrumentation And Measurement, Carr, Pearson
- Electronic Instrumentation, H S Kalsi, TMH

ANALOG ELECTRONICS LAB - I

Course Code: BEC 322 **Credit Units: 01**

List of Experiments:

1. To study and plot the characteristics of a junction diode.
2. To study Zener diode I-V characteristics.
3. To study diode based clipping and clamping circuits.
4. To study half wave, full wave and bridge rectifier with filters.
5. To study the input and output characteristics of a transistor in its various configurations (CE and CB).
6. To study and plot the characteristics of a JFET in its various configurations.
7. To study and plot the characteristics of a MOSFET in its various configurations.
8. To study various types of Bias Stabilization for a transistor.
9. To study the gain and plot the frequency response of a single stage transistor amplifier.
10. To measure gain and plot the frequency response of double stage RC coupled amplifier.

Examination Scheme:

IA				EE	
A	**PR**	**LR**	**V**	**PR**	**V**
5	10	10	5	35	35

Note: IA –Internal Assessment, EE- External Exam, PR- Performance, LR – Lab Record, V – Viva.

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Electronics & Communication Engineering

CIRCUITS AND SYSTEMS LAB

Course Code: BEC 323 **Credit Units: 01**

List of Experiments:

1. To verify Thevenin's theorem in a given network.
2. To verify reciprocity theorem in a given network.
3. To verify maximum power transfer theorem in a given network.
4. To verify Tellegen's theorem in a given network.
5. To determine the Z- and Y- parameters of a resistive two-port network.
6. To determine the T- (ABCD) parameters of a resistive two-port network.
7. To determine the h- parameters of a resistive two-port network.
8. To design series-series connection of 2 two-port networks and determine its Z- parameters.
9. To design parallel-parallel connection of 2 two-port networks and determine its Y- parameters.
10. To design a cascade connection of 2 two-port networks and determine its T- (ABCD) parameters.

Examination Scheme:

IA				EE	
A	**PR**	**LR**	**V**	**PR**	**V**
5	10	10	5	35	35

Note: IA –Internal Assessment, EE- External Exam, PR- Performance, LR – Lab Record, V – Viva.

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JAVA PROGRAMMING LAB

Course Code: **BEC 325** **Credit Units: 01**

Software Required: JDK1.3

List of Experiments:

- Java programs using classes & objects and various control constructs such as loops etc, and data structures such as arrays, structures and functions
- Java programs for creating Applets for display of images and texts.
- Programs related to Interfaces & Packages.
- Input/Output and random files programs in Java.
- Java programs using Event driven concept.
- Programs related to network programming.

Examination Scheme:

IA				EE	
A	**PR**	**LR**	**V**	**PR**	**V**
5	10	10	5	35	35

Note: IA –Internal Assessment, EE- External Exam, PR- Performance, LR – Lab Record, V – Viva.

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Electronics & Communication Engineering

COMMUNICATION SKILLS - I

Course Code: BCS 301 **Credit Units: 01**

Course Objective:
To form written communication strategies necessary in the workplace

Course Contents:

Module I: Introduction to Writing Skills
Effective Writing Skills
Avoiding Common Errors
Paragraph Writing
Note Taking
Writing Assignments

Module II: Letter Writing
Types
Formats

Module III
Memo
Agenda and Minutes
Notice and Circulars

Module IV: Report Writing
Purpose and Scope of a Report
Fundamental Principles of Report Writing
Project Report Writing
Summer Internship Reports

Examination Scheme:

Components	CT1	CT2	CAF	V	GD	GP	A
Weightage (%)	20	20	25	10	10	10	5

CAF – Communication Assessment File
GD – Group Discussion
GP – Group Presentation

Text & References:

Text
- Business Communication, Raman – Prakash, Oxford
- Creative English for Communication, Krishnaswamy N, Macmillan
- Textbook of Business Communication, Ramaswami S, Macmillan
- Working in English, Jones, Cambridge

Reference
- A Writer's Workbook Fourth edition, Smoke, Cambridge
- Effective Writing, Withrow, Cambridge
- Writing Skills, Coe/Rycroft/Ernest, Cambridge
- Welcome!, Jones, Cambridge

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PROGRAMME STRUCTURE

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BEHAVIOURAL SCIENCE - III
(INTERPERSONAL COMMUNICATION)

Course Code: BSS 304 **Credit Units: 01**

Course Objective:

This course provides practical guidance on

- Enhancing personal effectiveness and performance through effective interpersonal communication
- Enhancing their conflict management and negotiation skills

Course Contents:

Module I: Interpersonal Communication: An Introduction
Importance of Interpersonal Communication
Types – Self and Other Oriented
Rapport Building – NLP, Communication Mode
Steps to improve Interpersonal Communication

Module II: Behavioural Communication
Meaning and Nature of behavioiural communication
Persuasion, Influence, Listening and Questioning
Guidelines for developing Human Communication skills
Relevance of Behavioural Communication for personal and professional development

Module III: Interpersonal Styles
Transactional Analysis
Life Position/Script Analysis
Games Analysis
Interactional and Transactional Styles

Module IV: Conflict Management
Meaning and nature of conflicts
Styles and techniques of conflict management
Conflict management and interpersonal communication

Module V: Negotiation Skills
Meaning and Negotiation approaches (Traditional and Contemporary)
Process and strategies of negotiations
Negotiation and interpersonal communication

Module VI: End-of-Semester Appraisal
Viva based on personal journal
Assessment of Behavioural change as a result of training
Exit Level Rating by Self and Observer

Examination Scheme:

Components	SAP	A	Mid Term Test (CT)	VIVA	Journal for Success (JOS)
Weightage (%)	20	05	20	30	25

Text & References:

Text

- Vangelist L. Anita, Mark N. Knapp, Inter Personal Communication and Human Relationships: Third Edition, Allyn and Bacon

- Julia T. Wood. Interpersonal Communication everyday encounter
- Simons, Christine, Naylor, Belinda: Effective Communication for Managers, 1997 1st Edition Cassel
- Goddard, Ken: Informative Writing, 1995 1st Edition, Cassell

Reference

- Harvard Business School, Effective Communication: United States of America
- Foster John, Effective Writing Skills: Volume-7, First Edition 2000, Institute of Public Relations (IPR)
- Beebe, Beebe and Redmond; Interpersonal Communication, 1996; Allyn and Bacon Publishers.

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PROGRAMME STRUCTURE

Electronics & Communication Engineering

FRENCH

Course Code: FLT 301 **Credit Units: 02**

Course Objective:

To provide the students with the know-how

- To master the current social communication skills in oral and in written.
- To enrich the formulations, the linguistic tools and vary the sentence construction without repetition.

Course Contents:

Module B: pp. 76 – 88 Unité 6

Module C: pp. 89 to103 Unité 7

Contenu lexical:

Unité 6: se faire plaisir

1. acheter : exprimer ses choix, décrire un objet (forme, dimension, poids et matières) payer
2. parler de la nourriture, deux façons d'exprimer la quantité, commander un repas au restaurant
3. parler des différentes occasions de faire la fête

Unité 7: Cultiver ses relations

1. maîtriser les actes de la communication sociale courante (Salutations, présentations, invitations, remerciements)
2. annoncer un événement, exprimer un souhait, remercier, s'excuser par écrit.
3. caractériser une personne (aspect physique et caractère)

Contenu grammatical:

1. accord des adjectifs qualificatifs
2. articles partitifs
3. Négations avec de, ne…rien/personne/plus
4. Questions avec combien, quel…
5. expressions de la quantité
6. ne…plus/toujours - encore
7. pronoms compléments directs et indirects
8. accord du participe passé (auxiliaire « avoir ») avec l'objet direct
9. Impératif avec un pronom complément direct ou indirect
10. construction avec « que » - Je crois que/ Je pense que/ Je sais que

Examination Scheme:

Components	CT1	CT2	C	I	V	A
Weightage (%)	20	20	20	20	15	5

C – Project + Presentation
I – Interaction/Conversation Practice

Text & References:

- le livre à suivre : Campus: Tome 1

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Electronics & Communication Engineering
GERMAN

Course Code: FLG 301 **Credit Units: 02**

Course Objective:
To enable the students to converse, read and write in the language with the help of the basic rules of grammar, which will later help them to strengthen their language.
To give the students an insight into the culture, geography, political situation and economic opportunities available in Germany

Course Contents:

Module I: Modal verbs
Modal verbs with conjugations and usage
Imparting the finer nuances of the language

Module II: Information about Germany (ongoing)
Information about Germany in the form of presentations or "Referat"– neighbors, states and capitals, important cities and towns and characteristic features of the same, and also a few other topics related to Germany.

Module III: Dative case
Dative case, comparison with accusative case
Dative case with the relevant articles
Introduction to 3 different kinds of sentences – nominative, accusative and dative

Module IV: Dative personal pronouns
Nominative, accusative and dative pronouns in comparison

Module V: Dative prepositions
Dative preposition with their usage both theoretical and figurative use

Module VI: Dialogues
In the Restaurant,
At the Tourist Information Office,
A telephone conversation

Module VII: Directions
Names of the directions
Asking and telling the directions with the help of a roadmap

Module VIII: Conjunctions
To assimilate the knowledge of the conjunctions learnt indirectly so far

Examination Scheme:

Components	CT1	CT2	C	I	V	A
Weightage (%)	20	20	20	20	15	5

C – Project + Presentation
I – Interaction/Conversation Practice

Text & References:

Text
- Wolfgang Hieber, Lernziel Deutsch
- Hans-Heinrich Wangler, Sprachkurs Deutsch

- Schulz Griesbach, Deutsche Sprachlehre für Ausländer
- P.L Aneja, Deutsch Interessant- 1, 2 & 3

Reference

- Rosa-Maria Dallapiazza et al, Tangram Aktuell A1/1,2
- Braun, Nieder, Schmöe, Deutsch als Fremdsprache 1A, Grundkurs

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PROGRAMME STRUCTURE

Electronics & Communication Engineering

SPANISH

Course Code: FLS 301 **Credit Units: 02**

Course Objective:

To enable students acquire knowledge of the Set/definite expressions (idiomatic expressions) in Spanish language and to handle some Spanish situations with ease.

Course Contents:

Module I
Revision of earlier semester modules
Set expressions (idiomatic expressions) with the verb *Tener, Poner, Ir….*
Weather

Module II
Introduction to *Gustar*…and all its forms. Revision of *Gustar* and usage of it

Module III
Translation of Spanish-English; English-Spanish. Practice sentences.
How to ask for directions (using estar)
Introduction to IR + A + INFINITIVE FORM OF A VERB

Module IV
Simple conversation with help of texts and vocabulary
En el restaurante
En el instituto
En el aeropuerto

Module V
Reflexives

Examination Scheme:

Components	CT1	CT2	C	I	V	A
Weightage (%)	20	20	20	20	15	5

C – Project + Presentation
I – Interaction/Conversation Practice

Text & References:

Text

- Español, En Directo I A

Reference

- Español Sin Fronteras -Nivel Elemental

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Electronics & Communication Engineering
CHINESE

Course Code: FLC 301 **Credit Units: 02**

Course Objective:
Foreign words are usually imported by translating the concept into Chinese, the emphasis is on the meaning rather than the sound. But the system runs into a problem because the underlying name of personal name is often obscure so they are almost always transcribed according to their pronciation alone. The course aims at familiarizing the student with the basic aspects of speaking ability of Mandarin, the language of Mainland China. The course aims at training students in practical skills and nurturing them to interact with a Chinese person.

Course Contents:

Module I
Drills
Dialogue practice
Observe picture and answer the question.
Introduction of written characters.
Practice reading aloud
Practice using the language both by speaking and by taking notes.
Character writing and stroke order

Module II
Measure words
Position words e.g. inside, outside, middle, in front, behind, top, bottom, side, left, right, straight.
Directional words – beibian, xibian, nanbian, dongbian, zhongjian.
Our school and its different building locations.
What game do you like?
Difference between "hii" and "neng", "keyi".

Module III
Changing affirmative sentences to negative ones and vice versa
Human body parts.
Not feeling well words e.g.; fever, cold, stomach ache, head ache.
Use of the modal particle "le"
Making a telephone call
Use of "jiu" and "cal" (Grammar portion)
Automobiles e.g. Bus, train, boat, car, bike etc.
Traveling, by train, by airplane, by bus, on the bike, by boat.. etc.

Module IV
The ordinal number "di"
"Mei" the demonstrative pronoun e.g. mei tian, mei nian etc.
use of to enter to exit
Structural particle "de" (Compliment of degree).
Going to the Park.
Description about class schedule during a week in school.
Grammar use of "li" and "cong".
Comprehension reading followed by questions.

Module V
Persuasion-Please don't smoke.
Please speak slowly
Praise – This pictorial is very beautiful
Opposites e.g. Clean-Dirty, Little-More, Old-New, Young-Old, Easy-Difficult, Boy-Girl, Black-White, Big-Small, Slow-Fast … etc.

Talking about studies and classmates
Use of "it doesn't matter"
Enquiring about a student, description about study method.
Grammar: Negation of a sentence with a verbal predicate.

Examination Scheme:

Components	CT1	CT2	C	I	V	A
Weightage (%)	20	20	20	20	15	5

C – Project + Presentation
I – Interaction/Conversation Practice

Text & References:

- "Elementary Chinese Reader Part I, Part-2" Lesson 21-30

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PROGRAMME STRUCTURE
Electronics & Communication Engineering

DIGITAL CIRCUITS AND SYSTEMS – I

Course Code: BEC 401 **Credit Units: 03**

Course Objective:
This course is an introduction to the basic principles of digital electronics. At the conclusion of this course, the student will be able to quantitatively identify the fundamentals of computers, including number systems, logic gates, logic and arithmetic subsystems, and integrated circuits. They will gain the practical skills necessary to work with digital circuits through problem solving and hands on laboratory experience with logic gates, encoders, flip-flops, counters, shift registers, adders, etc. The student will be able to analyze and design simple logic circuits using tools such as Boolean Algebra and Karnaugh Mapping, and will be able to draw logic diagrams.

Course Contents:

Module I: Boolean Functions:
Analog & digital signals, AND, OR, NOT, NAND, NOR, XOR & XNOR gates, Boolean algebra, DeMorgan's theorems, Implementation of logical function using only NAND/NOR gates, 1`s complement and 2`s complement, BCD to Gray and Gray to BCD code conversion, Standard representation of logical functions (SOP and POS forms), K-map representation and simplification of logical function up to five variables, don't care conditions, XOR & XNOR simplifications of K-maps, Tabulation method.

Module II: Combinational Circuits:
Adders, Subtractors, Implementation of full adder using half adder, full subtractor using half subtractor, Multiplexer, de-multiplexer, decoder & encoder, code converters, 1 & 2 bit comparators, BCD to seven segment decoder/encoder, Implementation of logic functions using multiplexer/de-multiplexer and decoder, Implementation of 16×1 MUX using 4×1 MUX, 4×16 decoder using 3×8 decoder etc., logic implementations using PROM, PLA & PAL.

Module III: Sequential Circuits:
Difference between combinational and sequential circuits, Latch, Flip-flops: SR, JK, D & T flip flops – Truth table, Excitation table, Conversion of flip-flops, set up and hold time, race around condition, Master Slave flip flop, Shift registers: SIPO, PISO, PIPO, SIPO, Bi-directional, 4-bit universal shift register; Counters: Asynchronous/ripple & synchronous counters – up/down, Ring counter, sequence detector.

Module IV: Logic families & data converters:
Logic families: Special characteristics (Fan out, Power dissipation, propagation delay, noise margin), working of RTL, DTL, TTL, ECL and CMOS families; Data converters: Special characteristics, ADC – successive approximation, linear ramp, dual slope; DAC – Binary Weighted, R-2R ladder type.

Examination Scheme:

Components	A	CT	S/V/Q	HA	EE
Weightage (%)	5	15	5	5	70

CT: Class Test, HA: Home Assignment, S/V/Q: Seminar/Viva/Quiz, EE: End Semester Examination; Att: Attendance

Text & References:

Text
- Moris Mano : Digital Design, Pearson Education.
- R. P. Jain: Digital Electronics, Tata McGraw Hill.

Reference

- Thomas L. Floyd: Digital Fundamentals, Pearson Education.
- Malvino and Leech: Digital Principles & Applications, Tata McGraw Hill.

ANALOG ELECTRONICS – II

Course Code: BEC 402 **Credit Units: 03**

Course Objective:

The purpose of this course is to introduce the student to the application of semiconductor devices in linear analog circuits. To insure the usefulness of the course material to both computer engineers and electrical engineers, the course stresses circuit designs using the operational amplifier.

Course Contents:

Module I: Building Blocks of Analog ICs :
Differential amplifier, Op-amp Model, op-amp DC & AC parameters, virtual ground, Current mirrors, Active loads, Level shifters and output stages.

Module II: Operational amplifiers:
Introduction, open loop and closed loop configuration, op-amp parameters (input offset current, output offset current, i/p bias current, CMRR, PSRR, null adjustment range, etc,) Inverting and non-inverting configuration, voltage gain of inverting and non inverting configurations.

Module III: Linear & Non Linear Wave shaping:
Adders, Voltage to current, current to voltage Converter, Integrators, Differentiators, Voltage follower (voltage buffer), summer, subtractor, Comparators, log/antilog circuits using Op-amps, precision rectifiers

Module IV: Waveform Generations:
Damped and undamped oscillations, Barkhausen criterion for sustained oscillation. Tank circuit generator Astable multi Vibrators, OTA-C Oscillators, Crystal oscillator. Types of oscillators: LC-Hartley and Colpitts, RC-RC phase shift and Wien bridge oscillator, Basics of tuned Amplifiers, Voltage Controlled Oscillator.

Module V: Active RC Filters & Applications of Linear Circuits :
Idealistic & Realistic response of filters (LP, BP, and HP), Butter worth & Chebyshev approximation filter functions, LP,BP,HP and All pass, Notch Filter, Operational transconductance amplifier (OTA)-C filters.

Module VI: Applications of IC Analog Multiplier & Timer :IC phase locked loops, 555 Timer, IC voltage regulators-(fixed, variable) 78xx, 79xx series and adjustable.

Examination Scheme:

Components	A	CT	S/V/Q	HA	EE
Weightage (%)	5	15	5	5	70

CT: Class Test, HA: Home Assignment, S/V/Q: Seminar/Viva/Quiz, EE: End Semester Examination; Att: Attendance

Text & References:

Text

- Richard C. Jaeger: Microelectronic Circuit Design
- Adel S. Sedra and K. C. Smith: Microelectronic Circuits
- Ramakant Gaekwad: Operational Amplifiers

Reference

- Rolf Schaumann and Mac E. Van Valkenburg: Design of Analog Filters
- D. Roy Choudhury and Shail B. Jain: Linear Integrated Circuits

COMMUNICATION SYSTEMS

Course Code: BEC 403 **Credit Units: 03**

Course Objective:

The purpose of this course is to provide a thorough introduction to analog and digital communications with an in depth study of various modulation techniques, Random processes are discussed, and information theory is introduced.

Course Contents:

Module I: Introduction:
Communication Process, Source of Information, base-band and pass-band signals, Review of Fourier transforms, Random variables, different types of PDF, need of modulation process, analog versus digital communications

Module II: Amplitude Modulation:
Amplitude modulation with full carrier, suppressed carrier systems, single side band transmission, switching modulators, synchronous detection, envelope detection,Superheterodyne receiver, effect of frequency and phase errors in synchronous detection, comparison of various AM systems, vestigial side band transmission.

Module III: Angle Modulation:
Narrow and wide band FM, BW calculations using Carson rule, Direct & Indirect FM generations, phase modulation, Demodulation of FM signals, noise reduction using pre & de-emphasis.

Module IV: Pulse Modulation:
Pulse amplitude, width & position modulation, generation & detection of PAM, PWM & PPM, Comparison of frequency division and time division multiplexed systems.
Basics of Digital Communications: ASK, PSK, FSK, QPSK basics & waveform with brief mathematical introduction

Module V: Noise :
Different types of noise, noise calculations, equivalent noise band width, noise figures, effective noise temperature, noise figure.

Module VI: Introduction to Information Theory:
Measurement of Information, mutual, Shannon's theorem, Source coding, channel coding and channel capacity theorem, Huffman code

Examination Scheme:

Components	A	CT	S/V/Q	HA	EE
Weightage (%)	5	15	5	5	70

CT: Class Test, HA: Home Assignment, S/V/Q: Seminar/Viva/Quiz, EE: End Semester Examination; Att: Attendance

Text & References:

Text

- B. P. Lathi: "Modern analog & digital communication", OXFORD Publications
- Wayne Tomasi: "Electronic Communication systems", Pearson Education, 5th edition

Reference
- Simon Haykin, "Communication Systems", John Wiley & Sons, 1999, Third Edition.
- Taub and schilling, "Principles of Communication Systems" TMH

CONTROL SYSTEM

Course Code: BEE 404 **Credit Units: 03**

Course Objective:

The basic objective of this course is to provide the students the core knowledge of control systems, in which time & frequency domain analysis, concept of stability.

Course Contents:

Module I: Input / Output Relationship
Introduction of open loop and closed loop control systems, mathematical modeling and representation of physical systems (Electrical Mechanical and Thermal), derivation of transfer function for different types of systems, block diagram & signal flow graph, Reduction Technique, Mason's Gain Formula.

Module II: Time – Domain Analysis
Time domain performance criteria, transient response of first, second & higher order systems, steady state errors and static error constants in unity feedback control systems, error criteria, generalized error constants, performance indices, response with P, PI and PID Controllers.

Module III: Frequency Domain Analysis
Polar and inverse polar plots, frequency domain specifications, Logarithmic plots (Bode Plots),gain and phase margins, relative stability, Correlation with time domain, constant close loop frequency responses, from open loop response, Nyquist Plot.

Module IV: Concept of Stability
Asymptotic stability and conditional stability, Routh – Hurwitz criterion, Root Locus plots and their applications. Compensation Techniques: Concept of compensation, Lag, Lead and Lag-Lead networks, design of closed loop systems using compensation techniques. P, PI, PID controllers.

Examination Scheme:

Components	A	CT	S/V/Q	HA	EE
Weightage (%)	5	15	5	5	70

CT: Class Test, HA: Home Assignment, S/V/Q: Seminar/Viva/Quiz, EE: End Semester Examination; Att: Attendance

Text & References:

Text:
- Dr. N.K Jain, 2005,"Automatic Control System Engineering", Dhanpat Rai Publication.
- J. Nagrath & M. Gopal, 2000, "Control System Engineering", New Age International.

References:
- M, K. Ogata, 2002, "Modern Control Engineering, PHI.
- B. C. Kuo, 2001, "Automatic Control system, Prentice Hall of India.

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PROGRAMME STRUCTURE
Electronics & Communication Engineering

COMPUTER ORIENTED NUMERICAL METHODS

Course Code: BEC 405 **Credit Units: 03**

Course Objective:

The objective of this course is to provide conceptual understanding of various numerical methods, in particular, with reference to numerical solution of non linear equations and system of linear equations, interpolation, numerical differentiation and integration and numerical solution of ordinary differential equations. Important theorems and different formulae for various numerical methods to be covered with an aim of helping the students to understand the fundamentals, concepts and practical use of these methods in the field of computer sciences and applications.

Course Contents:

Module I: Numeric Computation and Numerical Solutions of Algebraic and Transcendental Equations:
Computer Arithmatic- Floating point numbers-operations, Normalization and their Consequences, Absolute, Relative and Percent Error. Solution of Algebraic and Transcendental Equations using Iterative Methods- Zeros of a single Transacendental equations and Zeros of Polynomial Equations using Bisection ,False Position, Newton-Raphson Methods, Convergence of Solution.

Module II: Solutions of system of Simultaneous Linear Equations:
Solution of Simultaneous Linear Equations. Direct Methods:- Gauss elimination method, Pivoting variable, Gauss-Jordan Method. Eigen values and Eigen vectors.
Iterative methods:-Jacobi's Methods, Gauss-Seidal Method.

Module III: Polynomial Interpolation:
Newtons divided difference, Forward and backward difference Formulae, Difference Tables, Lagrange's Method.

Module IV: Numerical Differentiation and Integration:
Formula for first and second order derivatives using newton's- Forward and Backward formula. Numerical Integration, Newton- Trapizoidal rule, Simpson's $1/3^{rd}$ rule ,Simpson's $3/8^{th}$ rule, Cotes Formula

Module V: Numerical Solution of Differential Equations:
Basic Terminology of Differential Equations, Picard's Method, Euler's method, Taylor's Series method, Runge-Kutta Methods, Predictor –Connector Method.

Examination Scheme:

Components	A	CT	S/V/Q	HA	EE
Weightage (%)	5	15	5	5	70

Text & References:

Text:

- Jain M.K, Jain R.K and Iyenger, Numerical Methods for Scientific and Engineering Applications.

References:

- Rajaraman V, Computer Oriented Numerical Methods.
- Krishnamuty, E.V., Sen, S.K, Computer Based Numerical Algorithms.
- Stoer, Bullrich, Computer Oriented Numerical Methods.

ELECTROMAGNETIC FIELD THEORY

Course Code: BEC 406 **Credit Units: 03**

Course Objective:

This course provides a general introduction to the important physical concepts and mathematical methods used in treating all types of wave phenomena, but stresses electromagnetic signal propagation and issues of central importance in electrical engineering. As a core course in the Electrical Computer and Systems Engineering option of the Engineering Sciences concentration, it provides essential background and basic preparation for more advanced work in device physics, microwave and ultra-fast circuitry, antenna design, optics, optical communication and optoelectronics.

Course Contents:

Module I: Mathematical Basics and Electrostatics:
Coordinate Systems: Spherical and Cylindrical coordinates, Dirac delta function, Coulomb's law, Gauss's law, Poisson's Equation, Laplace's Equation, Electrostatic Boundary conditions, Work and Energy in Electrostatics, Conductors, Surface charge and force on conductors

Module II: Magnetostatics and Magnetic Fields in matter:
Magnetic induction and Faraday's law, Magnetic Flux density, Magnetic Field Intensity, Biot Savart Law, steady currents, Ampere's law, Magnetostatic Boundary conditions, magnetic field inside matter, magnetic susceptibility and permeability, ferromagnetism, energy stored in a Magnetic field, Magnetic Vector Potential

Module III: **Electrodynamics:**
Faraday's laws, Maxwell's equations, Maxwell's modification of Ampere's law, continuity equation and Poynting theorem.

Module IV: Electrodynamic Waves:
Wave propagation in unbounded media, Boundary conditions, reflection and transmission, polarization, E.M. waves in vacuum, E. M. waves in matter: reflection and transmission of plane waves.

Module V: Introduction to Transmission Lines:
Transmission Line, Line Parameters, Characteristic Impedance, Image Impedance, HVDC and HVAC Common faults in transmission lines. Skin Effect, Ferranti Effect and Corona. Standing wave ratio, input impedance and smith chart.

Examination Scheme:

Components	A	CT	S/V/Q	HA	EE
Weightage (%)	5	15	5	5	70

CT: Class Test, HA: Home Assignment, S/V/Q: Seminar/Viva/Quiz, EE: End Semester Examination; Att: Attendance

Text & References:

Text
- Griffiths: Introduction to Electrodynamics
- Fawwaz T. Ulaby: Fundamentals of Applied Electromagnetics

Reference
- Hayt, William H., Buck, John A. Hayt, William H., Buck, John A., Engineering Electromagnetics

DIGITAL CIRCUITS AND SYSTEMS LAB – I

Course Code: BEC 421 **Credit Units: 01**

List of Experiments:

1. To verify the truth tables of NOT, OR, AND, NOR, NAND, XOR, XNOR gates.
2. To obtain half adder, full adder using gates and verify their truth tables.
3. To obtain half subtractor, full subtractor using gates and verify their truth tables.
4. To implement control circuit using multiplexer.
5. To convert BCD code into excess 3 code and verify the truth table.
6. To verify the truth tables of RS, D, JK and T flip- flops.
7. To implement and verify 3-bit bi-directional shift register.
8. To design and study asynchronous/ripple counter.
9. To design and study synchronous counter.
10. To design and study a sequence detector.

Examination Scheme:

IA				EE	
A	**PR**	**LR**	**V**	**PR**	**V**
5	10	10	5	35	35

Note: IA –Internal Assessment, EE- External Exam, PR- Performance, LR – Lab Record, V – Viva.

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Electronics & Communication Engineering

ANALOG ELECTRONICS LAB – II

Course Code: **BEC 422** **Credit Units: 01**

List of Experiments:

1. To study the op amp as an inverting and non inverting amplifier.
2. To use the op amp as an adder, subtractor, integrator and differentiator.
3. To design a ramp and a square wave generator.
4. To study the IC-555 timer as stable and bistable multivibrator.
5. To design low pass, high pass and band pass filters using op- amp. and plot their frequency response.
6. To design and study class a power amplifier.
7. To design and study a class B push pull amplifier.
8. To study various feedbacks such as voltage series feedback.
9. To design RC phase shift and Wein bridge oscillators using op amplifier.
10. To design and study Colpitt and Hartley oscillators.

Examination Scheme:

IA				EE	
A	**PR**	**LR**	**V**	**PR**	**V**
5	10	10	5	35	35

Note: IA –Internal Assessment, EE- External Exam, PR- Performance, LR – Lab Record, V – Viva.

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COMMUNICATION SYSTEMS LAB

Course Code: BEC 423 **Credit Units: 01**

List of Experiments:

1. To study the sampling and reconstruction of a given signal.
2. To study amplitude modulation and demodulation.
3. To study frequency modulation and demodulation.
4. To study time division multiplexing.
5. To study pulse amplitude modulation.
6. To study delta and adaptive delta modulation and demodulation.
7. To study carrier modulation techniques using amplitude shift keying and Frequency shift keying.
8. To study carrier modulation techniques using binary phase shift keying and differential shift keying.
9. To study pulse code modulation & differential pulse code modulation as well as relevant demodulations.
10. To study quadrature phase shift keying & quadrature amplitude modulation.

Examination Scheme:

IA				EE	
A	**PR**	**LR**	**V**	**PR**	**V**
5	10	10	5	35	35

Note: IA –Internal Assessment, EE- External Exam, PR- Performance, LR – Lab Record, V – Viva.

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CONTROL SYSTEM LAB

Course Code: **BEE 424** **Credit Units: 01**

List of Experiments:

1. Study and draw
   a) Step response of open Loop system (linear 1st order, 2nd order
   b) Step response of closed loop systems (1st order)
2. Study and draw temperature control system the open loop response and closed loop response with different values of gains
3. Study of operations and characteristics of a stepper motor
4. To Study a D.C. motor speed control system.
5. Performance evaluation and design of PID controller.
6. Study of microprocessor control of a simulated linear system.
7. To design a suitable cascade compensator for the given system and verify the resulting improvement.
8. Note: three experiments in MATLAB have to be performed in the slot of MATLAB.
   Using MATLAB obtain the unit-step response and unit impulse response of the following system:
   $$\frac{C(s)}{R(s)} = \frac{16}{s^2 + 1.6s + 16}$$
9. For a 2nd order transfer function using MATLAB
   a) Bode Plot
   b)Root locus plot
   c)Nyquist plot.

Examination Scheme:

IA				EE	
A	**PR**	**LR**	**V**	**PR**	**V**
5	10	10	5	35	35

Note: IA –Internal Assessment, EE- External Exam, PR- Performance, LR – Lab Record, V – Viva

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Electronics & Communication Engineering

COMMUNICATION SKILLS - II

Course Code: BCS 401 **Credit Units: 01**

Course Objective:
To teach the participants strategies for improving academic reading and writing.
Emphasis is placed on increasing fluency, deepening vocabulary, and refining academic language proficiency.

Course Contents:

Module I: Social Communication Skills
Small Talk
Conversational English
Appropriateness
Building rapport

Module II: Context Based Speaking
In general situations
In specific professional situations
Discussion and associated vocabulary
Simulations/Role Play

Module III: Professional Skills
Presentations
Negotiations
Meetings
Telephony Skills

Examination Scheme:

Components	CT1	CT2	CAF	V	GD	GP	A
Weightage (%)	20	20	25	10	10	10	5

CAF – Communication Assessment File
GD – Group Discussion
GP – Group Presentation

Text & References:

Text
- Essential Telephoning in English, Garside/Garside, Cambridge
- Working in English, Jones, Cambridge
- Business Communication, Raman – Prakash, Oxford

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Reference

- Speaking Personally, Porter-Ladousse, Cambridge
- Speaking Effectively, Jermy Comfort, et.al, Cambridge
- Business Communication, Raman – Prakash, Oxford

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BEHAVIOURAL SCIENCE - IV
(RELATIONSHIP MANAGEMENT)

Course Code: BSS 404 **Credit Units: 01**

Course Objective:

To understand the basis of interpersonal relationship
To understand various communication style
To learn the strategies for effective interpersonal relationship

Course Contents:

Module I: Understanding Relationships
Importance of relationships
Role and relationships
Maintaining healthy relationships

Module II: Bridging Individual Differences
Understanding individual differences
Bridging differences in Interpersonal Relationship – TA
Communication Styles

Module III: Interpersonal Relationship Development
Importance of Interpersonal Relationships
Interpersonal Relationships Skills
Types of Interpersonal Relationships

Module IV: Theories of Interpersonal Relationships
Theories: Social Exchange, Uncertainty Reduction Theory
Factors Affecting Interpersonal Relationships
Improving Interpersonal Relationships

Module V: Impression Management
Meaning & Components of Impression Management
Impression Management Techniques (Influencing Skills)
Impression Management Training-Self help and Formal approaches

Module VI: End-of-Semester Appraisal
Viva based on personal journal
Assessment of Behavioural change as a result of training
Exit Level Rating by Self and Observer

Examination Scheme:

Components	SAP	A	Mid Term Test (CT)	VIVA	Journal for Success (JOS)
Weightage (%)	20	05	20	30	25

Text & References:

Text

- Vangelist L. Anita, Mark N. Knapp, Inter Personal Communication and Human Relationships: Third Edition, Allyn and Bacon
- Julia T. Wood. Interpersonal Communication everyday encounter
- Simons, Christine, Naylor, Belinda: Effective Communication for Managers, 1997 1st Edition Cassell
- Goddard, Ken: Informative Writing, 1995 1st Edition, Cassell

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Reference

- Harvard Business School, Effective Communication: United States of America
- Foster John, Effective Writing Skills: Volume-7, First Edition 2000, Institute of Public Relations (IPR)
- Beebe, Beebe and Redmond; Interpersonal Communication, 1996; Allyn and Bacon Publishers.

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FRENCH - IV

Course Code: FLT 401 **Credit Units: 02**

Course Objective:

To enable students:

- To develop strategies of comprehension of texts of different origin
- To present facts, projects, plans with precision

Course Contents:

Module C: pp. 104 – 139: Unités 8, 9

Contenu lexical: **Unité 8: Découvrir le passé**

1. parler du passé, des habitudes et des changements.
2. parler de la famille, raconter une suite d'événements/préciser leur date et leur durée.
3. connaître quelques moments de l'histoire

Unité 9: Entreprendre

1. faire un projet de la réalisation: (exprimer un besoin, préciser les étapes d'une réalisation)
2. parler d'une entreprise
3. parler du futur

Contenu grammatical:

1. Imparfait
2. Pronom « en »
3. Futur
4. Discours rapporté au présent
5. Passé récent
6. Présent progressif

Examination Scheme:

Components	CT1	CT2	C	I	V	A
Weightage (%)	20	20	20	20	15	5

C – Project + Presentation
I – Interaction/Conversation Practice

Text & References:

- le livre à suivre : Campus: Tome 1

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GERMAN - IV

Course Code: FLG 401 **Credit Units: 02**

Course Objective:
To enable the students to converse, read and write in the language with the help of the basic rules of grammar, which will later help them to strengthen their language.
To give the students an insight into the culture, geography, political situation and economic opportunities available in Germany.
Introduction to Advanced Grammar Language and Professional Jargon

Course Contents:

Module I: Present perfect tense
Present perfect tense, usage and applicability
Usage of this tense to indicate near past
Universal applicability of this tense in German

Module II: Letter writing
To acquaint the students with the form of writing informal letters.

Module III: Interchanging prepositions
Usage of prepositions with both accusative and dative cases
Usage of verbs fixed with prepositions
Emphasizing on the action and position factor

Module IV: Past tense
Introduction to simple past tense
Learning the verb forms in past tense
Making a list of all verbs in the past tense and the participle forms

Module V: Reading a Fairy Tale
Comprehension and narration
- Rotkäppchen
- Froschprinzessin
- Die Fremdsprache

Module VI: Genitive case
Genitive case – Explain the concept of possession in genitive
Mentioning the structure of weak nouns

Module VII: Genitive prepositions
Discuss the genitive propositions and their usage: (während, wegen, statt, trotz)

Module VIII: Picture Description
Firstly recognize the persons or things in the picture and identify the situation depicted in the picture;
Secondly answer questions of general meaning in context to the picture and also talk about the personal experiences which come to your mind upon seeing the picture.

Examination Scheme:

Components	CT1	CT2	C	I	V	A
Weightage (%)	20	20	20	20	15	5

C – Project + Presentation
I – Interaction/Conversation Practice

Text & References:

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Text

- Wolfgang Hieber, Lernziel Deutsch
- Hans-Heinrich Wangler, Sprachkurs Deutsch
- Schulz Griesbach, Deutsche Sprachlehre für Ausländer
- P.L Aneja, Deutsch Interessant- 1, 2 & 3

Reference

- Rosa-Maria Dallapiazza et al, Tangram Aktuell A1/1,2
- Braun, Nieder, Schmöe, Deutsch als Fremdsprache 1A, Grundkurs

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SPANISH - IV

Course Code: FLS 401 **Credit Units: 02**

Course Objective:

To enable students acquire working knowledge of the language; to give them vocabulary, grammar, voice modulations/intonations to handle everyday Spanish situations with ease.

Course Contents:

Module I
Revision of earlier semester modules
Introduction to Present Continuous Tense (Gerunds)

Module II
Translation with Present Continuous Tense
Introduction to Gustar, Parecer, Apetecer, doler

Module III
Imperatives (positive and negative commands of regular verbs)

Module IV
Commercial/business vocabulary

Module V
Simple conversation with help of texts and vocabulary
En la recepcion del hotel
En el restaurante
En la agencia de viajes
En la tienda/supermercado

Examination Scheme:

Components	CT1	CT2	C	I	V	A
Weightage (%)	20	20	20	20	15	5

C – Project + Presentation
I – Interaction/Conversation Practice

Text & References:

- Español Sin Fronteras (Nivel – Elemental)

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CHINESE – IV

Course Code: FLC 401 **Credit Units: 02**

Course Objective:

How many characters are there? The early Qing dynasty dictionary included nearly 50,000 characters the vast majority of which were rare accumulated characters over the centuries. An educate person in China can probably recognize around 6000 characters. The course aims at familiarizing the student with the basic aspects of speaking ability of Mandarin, the language of Mainland China. The course aims at training students in practical skills and nurturing them to interact with a Chinese person.

Course Contents:

Module I
Dialogue Practice
Observe picture and answer the question
Pronunciation and intonation
Character writing and stroke order.
Electronic items

Module II
Traveling – The Scenery is very beautiful
Weather and climate
Grammar question with – "bu shi …. Ma?"
The construction "yao … le" (Used to indicate that an action is going to take place)
Time words "yiqian", "yiwai" (Before and after).
The adverb "geng".

Module III
Going to a friend house for a visit meeting his family and talking about their customs.
Fallen sick and going to the Doctor, the doctor examines, takes temperature and writes prescription.
Aspect particle "guo" shows that an action has happened some time in the past.
Progressive aspect of an actin "zhengzai" Also the use if "zhe" with it.
To welcome someone and to see off someone …. I cant go the airport to see you off… etc.

Module IV
Shipment. Is this the place to checking luggage?
Basic dialogue on – Where do u work?
Basic dialogue on – This is my address
Basic dialogue on – I understand Chinese
Basic dialogue on – What job do u do?
Basic dialogue on – What time is it now?

Module V
Basic dialogue on – What day (date) is it today?
Basic dialogue on – What is the weather like here.
Basic dialogue on – Do u like Chinese food?
Basic dialogue on – I am planning to go to China.

Examination Scheme:

Components	CT1	CT2	C	I	V	A
Weightage (%)	20	20	20	20	15	5

C – Project + Presentation
I – Interaction/Conversation Practice

Text & References:

- "Elementary Chinese Reader, Part-2" Lesson 31-38

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PROGRAMME STRUCTURE
Electronics & Communication Engineering

MICROPROCESSOR AND MICROCONTROLLER SYSTEMS

Course Code: BEC 501 **Credit Units: 03**

Course Objective:
This course deals with the systematic study of the Architecture and programming issues of 8085-microprocessor family. The aim of this course is to give the students basic knowledge of the above microprocessor needed to develop the systems using it.

Course Contents:

Module I: Introduction to Microcomputer Systems
Introduction to Microprocessors and microcomputers, Study of 8 bit Microprocessor, 8085 pin configuration, Internal Architecture and operations, interrupts, Stacks and subroutines, various data transfer schemes.

Module II: ALP and timing diagrams
Introduction to 8085 instruction set, advance 8085 programming, Addressing modes, Counters and time Delays, Instruction cycle, machine cycle, T-states, timing diagram for 8085 instruction.

Module III: Memory System Design & I/O Interfacing
Memory interfacing with 8085. Interfacing with input/output devices (memory mapped, peripheral I/O), Cache memory system. Study of following peripheral devices 8255, 8253, 8257, 8259, 8251.

Module IV: Architecture of 16-Bit Microprocessor
Difference between 8085 and 8086, Block diagram and architecture of 8086 family, pin configuration of 8086, minimum mode & maximum mode Operation, Bus Interface Unit, Register Organization, Instruction Pointer, Stack & Stack pointer, merits of memory segmentation, Execution Unit, Register Organization.

Module V: Pentium Processors
.Internal architecture of 8087, Operational overview of 8087, Introduction to 80186, 80286, 80386 & 80486 processors, Pentium processor (P-II, P-III, P-IV).

Examination Scheme:

Components	A	CT	S/V/Q	HA	EE
Weightage (%)	5	15	5	5	70

CT: Class Test, HA: Home Assignment, S/V/Q: Seminar/Viva/Quiz, EE: End Semester Examination; Att: Attendance

Text & References:

Text
- Ramesh. S. Gaonkar, "Microprocessor architecture Programming and Application with 8085" Penram International Publishing, 4th Edition
- B. Ram, "Fundamentals of microprocessors and microcomputer" Dhanpat Rai, 5th Edition.

Reference
- Douglas V Hall.
- M. Rafiquzzaman, "Microprocessor Theory and Application" PHI – 10th Indian Reprint.
- Naresh Grover, "Microprocessor comprehensive studies Architecture, Programming and Interfacing" Dhanpat Rai, 2003.

- Gosh," 0000 to 8085" PHI.

DIGITAL CIRCUITS AND SYSTEMS - II

Course Code: BEC 502 **Credit Units: 03**

Course Objective:

This course builds on the course Digital Circuits and Systems - Hardware development language VHDL is introduced; the usage of the same to implement the systems is dealt in detail.

Course Contents:

Module I: Design of Sequential circuits

SR, JK, T and D flip flops and their timing diagrams with delay, characteristic table, characteristic equation and excitation tables. Design of Finite State Machines: Mealy and Moore type using next state tables, state diagrams, state minimization, state encoding: minimum bit change and hot one encodings. Comparative cost and delays of different implementations and their optimization and timing diagrams, Asynchronous and synchronous sequential circuits Static Timing Analysis –setup, hold time, clock skew, clock period
Data paths, FSMs with datapaths, ASM charts

Module II: Basics of VHDL

Introduction and Basic Design Units of VHDL, Writing Entities for Digital circuits like decoders, registers etc, Scalar Data types and Operations: Object types: constants, variables, signal and files. Data Types: scalar, integer, floating, physical, enumeration, type declarations, subtypes, expressions and operators for various types. Sequential statements: If, case, Null, Loop, Exit, Next statements, while loops, For loops, Assertion and report statements.Composite Arrays: arrays, Array aggregates, unconstrained array types, strings, Bit vectors, Standard Logic Arrays, array operations and records

Module III: VHDL Programming

Behavioral Modeling: process statements, variable and signal assignments, inertial and transport delay models, signal drivers, multiple and postponed processes,Dataflow Modeling: Concurrent signal assignment, multiple drivers, block statement,Structural Modeling: component declaration, component instantiation, resolving signal values, and configuration: basic configuration, configuration for structural modeling, mapping library entities.Generics, generic (AND, NAND, OR, NOR, XOR and XNOR) gates, functions and subprograms, packages and libraries .

Module IV: Synthesis: mapping statements to gates

Writing a test bench, converting real and integers to time, dumping and reading from text file ,Vhdl modeling of basic gates, half and full adder AOI, IOA, OAI, multiplexes, decoders (dataflow, behavioral and structural modeling), three state driver, parity checker, D, T, JK and SR flip flops, flip flops with preset and clear, modeling for multiplexer, priority encoder, ALU etc, modeling regular structures, delays, conditional operations, synchronous logic, state machine modeling, Moore and Mealy machines, generic priority encoder, clock divider, shift registers, pulse counter etc

Module V: Overview of the following

PLD devices, PROM, PAL, PLA, CPLD, EPLD GAL, FPGA, DRAM etc and their applications, FPGA programming, Design exercises ASIC design using CAD tools

Examination Scheme:

Components	A	CT	S/V/Q	HA	EE
Weightage (%)	5	15	5	5	70

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Electronics & Communication Engineering

Text & References:

Text

- Daniel Gajski: Principles of Digital Design
- Bhasker: A VHDL Primer 3/e

Reference

- Pedroni: Circuit Design with VHDL
- Perry: VHDL: Programming by examples K. Skahill, VHDL for programmable Logic

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Electronics & Communication Engineering

DIGITAL COMMUNICATIONS

Course Code: BEC 503 **Credit Units: 03**

Course Objective:
The purpose of this course is to provide a thorough introduction to digital communications with an in depth study of various modulation techniques, receiver design & performance analysis are discussed.

Course Contents:

Module I: Digital Communication System Basics
Basic building blocks of Digital communications, analog versus digital communication, Advantages disadvantages of digital communications.

Module II: Digital Baseband Transmission
Pulse code modulation, Signal to quantization ratio, non-uniform quantization companding, BW calculations.

Module III: Transmission of Analog Samples & Signal Detection in Noise
Delta Modulation, Adaptive delta-modulation, DPCM, ADCM, ADPCM, Matched Filter Receiver, Derivation of Its Impulse Response and Peak Pulse Signal to Noise Ratio. Correlator receiver, Decision Threshold and Error Probability For, Unipolar (ON-OFF) Signaling, ISI, Nyquist Criterion For Zero ISI & Raised Cosine Spectrum

Module IV: Digital Modulation Technique
Gram-Schmidt Orthogonalization Procedure, Types of Digital Modulation, Wave forms for Amplitude, Frequency and Phase Shift Keying, Method of Generation and Detection of Coherent & Non-Coherent Binary ASK, FSK & PSK Differential Phase Shift Keying, Quadrature Modulation Techniques QPSK, Probability of Error and Comparison of Various Digital Modulation Techniques.

Module V: Digital Multiplexing
Fundamentals of Time Division Multiplexing, Electronic Commutator, Bit, Byte Interleaving T1 Carrier System, Synchronization and Signaling of T1, TDM, PCM Hierarchy, T1 to T4 PCM TDM System (DS1 to DS4 Signals)

Examination Scheme:

Components	A	CT	S/V/Q	HA	EE
Weightage (%)	5	15	5	5	70

CT: Class Test, HA: Home Assignment, S/V/Q: Seminar/Viva/Quiz, EE: End Semester Examination; Att: Attendance

Text & References:

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Text
- Simon Haykin: "Digital Communication", John Wiley / 4th Ed.
- Bernard SKLAR: "Digital communication", Pearson education.

References:
- Lathi, B.P / "Modern Digital & Analog Communication Systems" / Oxford University Press /.
- Prokis J.J / "Digital Communications" / McGraw Hill /
- Wayne Tomasi: "Electronic Communication systems", Pearson Education,5th edition

TELECOMMUNICATION NETWORKS

Course Code: BEC 505 **Credit Units: 03**

Course Objective:
To acquire basic knowledge of telecommunication, architecture & exchanges, Different type of switching, coding, traffic engineering, data communication in PSTN.

Course Contents:

Module I
Evolution of telecommunication network, Basic switching system, simple telephone communication, crossbar switching systems, Electronic switching-Space division switching, Stored Program control-Centralized SPC, Distributed SPC, Software Architecture.

Module II
Speech digitization, Quantization Noise, Companding, Differential coding, delta modulation, line coding, NRZ & RZ codes, Manchester coding, AMI coding, Walsh coding, TDM.

Module III
Time division switching-Time division space switching, Time division time switching, Time multiplexed space switching, Time multiplexed time switching.

Module IV
Traffic engineering parameters, Grade of service, blocking probability, delay systems, switching hierarchy and routing, transmission plan, Signaling techniques, Common channel signaling, SS7, Data rates in PSTN

Examination Scheme:

Components	A	CT	S/V/Q	HA	EE
Weightage (%)	5	15	5	5	70

CT: Class Test, HA: Home Assignment, S/V/Q: Seminar/Viva/Quiz, EE: End Semester Examination; Att: Attendance

Text & References:

Text
- V Thyagarajan: Telecommunication, Switching systems and networks
- Forouzon: "data communication'

References

- Tanenbaum : Computer Network
- M. Schwartz : Telecommunication networks

OPERATING SYSTEMS

Course Code: BEC 506 **Credit Units: 03**

Course Objective:

Operating Systems serve as one of the most important courses for undergraduate students, since it provides the students with a new sight to envision every computerized systems especially general purpose computers. Therefore, the students are supposed to study, practice and discuss on the major fields discussed in the course to ensure the success of the education process. The outcome of this course implicitly and explicitly affects the abilities the students to understand, analyze and overcome the challenges they face with in the other courses and the real world.

Course Contents:

Module I: Introduction to operating system

Operating system and function, Evolution of operating system, Batch, Interactive, multiprogramming, Time Sharing and Real Time System, multiprocessor system, Distributed system, System protection. Operating System structure, Operating System Services, System Program and calls.

Module II: Process Management

Process concept, State model, process scheduling, job and process synchronization, structure of process management, Threads,Interprocess Communication and Synchronization:Principle of Concurrency, Producer Consumer Problem, Critical Section problem, Semaphores, Hardware Synchronization, Critical Regions, Conditional critical region, Monitor, Inter Process Communication.CPU Scheduling: Job scheduling functions, Process scheduling, Scheduling Algorithms, Non Preemptive and preemptive Strategies, Algorithm Evaluation, Multiprocessor Scheduling.Deadlock: System Deadlock Model, Deadlock Characterization, Methods for handling deadlock, Prevention strategies, Avoidance and Detection, Recovery from deadlock combined approach.

Module III: Memory Management

Single Contiguous Allocation: H/W support, S/W support, Advantages and disadvantages, Fragmentation, Paging, Segmentation, Virtual memory concept, Demand paging, Performance, Paged replaced algorithm, Allocation of frames, Thrashing, Cache memory, Swapping, Overlays

Module IV: Device management

Principles of I/O hardware, Device controller, Device Drivers, Memory mapped I/O, Direct Access Memory, Interrupts, Interrupt Handlers, Application I/O interface, I/O Scheduling, Buffering, Caching, Spooling,Disk organization, Disk space management, Disk allocation Method, Disk Scheduling, Disk storage.

Module V: File System and Protection and security

File Concept, File Organization and Access Mechanism, File Directories, Basic file system, File Sharing, Allocation method, Free space management.Policy Mechanism, Authentication, Internal excess Authorization.

Examination Scheme:

Components	A	CT	S/V/Q	HA	EE
Weightage (%)	5	15	5	5	70

CT: Class Test, HA: Home Assignment, S/V/Q: Seminar/Viva/Quiz, EE: End Semester Examination; Att: Attendance

Text & References:

Text:

- Milenekovic, “Operating System Concepts”, McGraw Hill
- A. Silberschatz, P.B. Galvin “Operating System Concepts”, John Willey & son

References:

- Dietel, “An introduction to operating system”, Addision Wesley
- Tannenbaum, “Operating system design and implementation”, PHI
- Operating System, A Modern Perspection, Gary Nutt, Pearson Edu. 2000
- A. S Tanenbaum, Modern Operating System, 2nd Edition, PHI.
- Willam Stalling “ Operating system” Pearson Education

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PRACTICAL TRAINING - I (Evaluation)

Course Code: **BEC 550** **Credit Units: 06**

Methodology:

Practical training is based on the theoretical subjects studied by students. It can be arranged within the college or in any related industrial unit. The students are to learn various industrial, technical and administrative processes followed in the industry. In case of on-campus training the students will be given specific task of fabrication/assembly/testing/analysis. On completion of the practical training the students are to present a report covering various aspects learnt by them and give a presentation on same.

Examination Scheme:

Feedback from industry/work place	20
Training Report	40
Viva	15
Presentation	25
Total	**100**

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Electronics & Communication Engineering

MICROPROCESSOR AND MICRO CONTROLLER SYSTEMS LAB

Course Code: **BEC 521** **Credit Units: 01**

List of Experiments:

1) Write at least three different programs for addition of two 8 bit numbers assuming carry may or may not be generated.
2) Write at least three different programs for subtraction of two 8 bit numbers assuming borrow may or may not be generated.
3) Write two different programs for 16 bit addition, one using instruction DAD and another without using instruction DAD.
4) Write assembly language program for 8 bit multiplication and division.
5) To study, understand, interface and two peripheral devices with 8085.
6) Any three programs using 8085 based on block of data.
7) Using 8086 write an ALP to add list of 10 given numbers.
8) Using 8086 write an ALP to sum the numbers from 1-100.
9) Using 8086 write an ALP to count negative numbers from a given list of 10 numbers.
10) Using 8086 write an ALP to check number of vowels in a given string.

Examination Scheme:

IA				EE	
A	**PR**	**LR**	**V**	**PR**	**V**
5	10	10	5	35	35

Note: IA –Internal Assessment, EE- External Exam, PR- Performance, LR – Lab Record, V – Viva

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DIGITAL CIRCUITS AND SYSTEMS – II LAB

Course Code: **BEC 522** **Credit Units: 01**

List of Experiments

To implement VHDL code for

1. 2, 3, 4 inputs AND, OR, XOR and XNOR gates and testing their simulation with signals.
2. Half adder, full adder and full subtractor. Also trying out other simple combinatorial circuits like AOI, IOA, OAI.
3. D and T, flip-flops.
4. JK and SR flip-flops.
5. 2 to 4 and 3 to 8 decoders.
6. 2 to 1, 4 to 1 and 8 to 1 multiplexers.
7. 2 to 1, 4 to 2 and 8 to 3 priority encoders.
8. 8 bit tri state drivers.
9 9 input parity checker.
10 1 bit, 4 bit 8 bit comparators.
11 Adding and subtracting 8 bit integers of various types.
12. Clock divider
13. Shift register
14. Pulse counters.
15. VHDL Design examples of Moore machine, Mealy machine, generic gate inputs and delays.
16. VHDL code examples of structural modeling showing binding.

Experiments based Field Programmable Gate Array (FPGA) Programming

17. Implementation of all the above VHDL experiments using FPGA.

Examination Scheme:

IA				EE	
A	**PR**	**LR**	**V**	**PR**	**V**

5	10	10	5	35	35

Note: IA –Internal Assessment, EE- External Exam, PR- Performance, LR – Lab Record, V – Viva.

COMMUNICATION SKILLS - III

Course Code: BCS 501 **Credit Units: 01**

Course Objective:

To equip the participant with linguistic skills required in the field of science and technology while guiding them to excel in their academic field.

Course Contents:

Module I
Reading Comprehension
Summarising
Paraphrasing

Module II
Essay Writing
Dialogue Report

Module III
Writing Emails
Brochure
Leaflets

Module IV: Introduction to Phonetics
Vowels
Consonants
Accent and Rhythm

Accent Neutralization
Spoken English and Listening Practice

Examination Scheme:

Components	CT1	CT2	CAF	V	GD	GP	A
Weightage (%)	20	20	25	10	10	10	5

CAF – Communication Assessment File
GD – Group Discussion
GP – Group Presentation

Text & References:

Text

- Effective English for Engineering Students, B Cauveri, Macmillan India
- Creative English for Communication, Krishnaswamy N, Macmillan

Reference

- A Textbook of English Phonetics, Balasubramanian T, Macmillan

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BEHAVIOURAL SCIENCE - V
(UNDERSTANDING SELF FOR EFFECTIVENESS)

Course Code: BSS 504 **Credit Units: 01**

Course Objective:
To inculcate in the students an elementary level of understanding of group/team functions
To develop team spirit and to know the importance of working in teams

Course Contents:

Module I: Group formation
Definition and Characteristics
Importance of groups
Classification of groups
Stages of group formation
Benefits of group formation

Module II: Group Functions
External Conditions affecting group functioning: Authority, Structure, Org. Resources, Organizational policies etc.
Internal conditions affecting group functioning: Roles, Norms, Conformity, Status, Cohesiveness, Size, Inter group conflict.
Group Cohesiveness and Group Conflict
Adjustment in Groups

Module III: Teams
Meaning and nature of teams
External and internal factors effecting team
Building Effective Teams
Consensus Building
Collaboration

Module IV: Leadership
Meaning, Nature and Functions
Self leadership
Leadership styles in organization
Leadership in Teams

Module V: Power to empower: Individual and Teams
Meaning and Nature
Types of power
Relevance in organization and Society

Module VI: End-of-Semester Appraisal
Viva based on personal journal
Assessment of Behavioural change as a result of training
Exit Level Rating by Self and Observer

Examination Scheme:

Components	SAP	A	Mid Term Test (CT)	VIVA	Journal for Success (JOS)
Weightage (%)	20	05	20	30	25

Text & References:

Text

- Organizational Behaviour, Davis, K.
- Hoover, Judhith D. Effective Small Group and Team Communication, 2002,Harcourt College Publishers
- Dick, Mc Cann & Margerison, Charles: Team Management, 1992 Edition, viva books
- Bates, A. P. and Julian, J.: Sociology - Understanding Social Behaviour
- Dressers, David and Cans, Donald: The Study of Human Interaction

Reference

- Lapiere, Richard. T – Social Change
- Lindzey, G. and Borgatta, E: Sociometric Measurement in the Handbook of Social Psychology, Addison – Welsley, US.
- Rose, G.: Oxford Textbook of Public Health, Vol.4, 1985.
- LaFasto and Larson: When Teams Work Best, 2001, Response Books (Sage), New Delhi
- J William Pfeiffer (ed.) Theories and Models in Applied Behavioural Science, Vol 2, Group (1996); Pfeiffer & Company
- Smither Robert D.; The Psychology of Work and Human Performance, 1994, Harper Collins College Publishers

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Electronics & Communication Engineering

FRENCH - V

Course Code: FLT 501 **Credit Units: 02**

Course Objective:

To furnish some basic knowledge of French culture and civilization for understanding an authentic document and information relating to political and administrative life

Course Contents:

Module D: pp. 131 – 156 Unités 10, 11

Contenu lexical:

Unité 10: Prendre des décisions

1. Faire des comparaisons
2. décrire un lieu, le temps, les gens, l'ambiance
3. rédiger une carte postale

Unité 11: faire face aux problèmes

1. Exposer un problème.
2. parler de la santé, de la maladie
3. interdire/demander/donner une autorisation
4. connaître la vie politique française

Contenu grammatical:

1. comparatif - comparer des qualités/ quantités/actions
2. supposition : Si + présent, futur
3. adverbe - caractériser une action
4. pronom "Y"

Examination Scheme:

Components	CT1	CT2	C	I	V	A
Weightage (%)	20	20	20	20	15	5

C – Project + Presentation
I – Interaction/Conversation Practice

Text & References:

- le livre à suivre : Campus: Tome 1

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GERMAN - V

Course Code: FLG 501 **Credit Units: 02**

Course Objective:
To enable the students to converse, read and write in the language with the help of the basic rules of grammar, which will later help them to strengthen their language.
To give the students an insight into the culture, geography, political situation and economic opportunities available in Germany
Introduction to Advanced Grammar and Business Language and Professional Jargon

Course Contents:

Module I: Genitive case
Genitive case – Explain the concept of possession in genitive
Mentioning the structure of weak nouns

Module II: Genitive prepositions
Discuss the genitive propositions and their usage: (während, wegen, statt, trotz)

Module III: Reflexive verbs
Verbs with accusative case
Verbs with dative case
Difference in usage in the two cases

Module IV: Verbs with fixed prepositions
Verbs with accusative case
Verbs with dative case
Difference in the usage of the two cases

Module V: Texts
A poem 'Maxi'
A text Rocko

Module VI: Picture Description
Firstly recognize the persons or things in the picture and identify the situation depicted in the picture;
Secondly answer questions of general meaning in context to the picture and also talk about the personal experiences which come to your mind upon seeing the picture.

Examination Scheme:

Components	CT1	CT2	C	I	V	A
Weightage (%)	20	20	20	20	15	5

C – Project + Presentation
I – Interaction/Conversation Practice

Text & References:

Text
- Wolfgang Hieber, Lernziel Deutsch
- Hans-Heinrich Wangler, Sprachkurs Deutsch
- Schulz Griesbach, Deutsche Sprachlehre für Ausländer

Reference
- P.L Aneja, Deutsch Interessant- 1, 2 & 3

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- Rosa-Maria Dallapiazza et al, Tangram Aktuell A1/1,2
- Braun, Nieder, Schmöe, Deutsch als Fremdsprache 1A, Grundkurs

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Electronics & Communication Engineering

SPANISH - V

Course Code: FLS 501 **Credit Units: 02**

Course Objective:

To enable students acquire working knowledge of the language; to give them vocabulary, grammar, voice modulations/intonations to handle everyday Spanish situations with ease.

Course Contents:

Module I
Revision of earlier semester modules

Module II
Future Tense

Module III
Presentations in English on
Spanish speaking countries'
Culture
Sports
Food
People
Politics
Society
Geography

Module IV
Situations:
En el hospital
En la comisaria
En la estacion de autobus/tren
En el banco/cambio

Module V
General revision of Spanish language learnt so far.

Examination Scheme:

Components	CT1	CT2	C	I	V	A
Weightage (%)	20	20	20	20	15	5

C – Project + Presentation
I – Interaction/Conversation Practice

Text & References:

- Español Sin Fronteras, Greenfield

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CHINESE – V

Course Code: FLC 501 **Credit Units: 02**

Course Objective:
What English words come from Chinese? Some of the more common English words with Chinese roots areginseng, silk, dim sum, fengshui, typhoon, yin and yang, T'al chi, kung-fu. The course aims at familiarizing the student with the basic aspects of speaking ability of Mandarin, the language of Mainland China. The course aims at training students in practical skills and nurturing them to interact with a Chinese person.

Course Contents:

Module I
Drills
Dialogue practice
Observe picture and answer the question.
Pronunciation and intonation.
Character writing and stroke order

Module II
Intonation
Chinese foods and tastes – tofu, chowmian, noodle, Beijing duck, rice, sweet, sour….etc. Learning to say phrases like – Chinese food, Western food, delicious, hot and spicy, sour, salty, tasteless, tender, nutritious, god for health, fish, shrimps, vegetables, cholesterol is not high, pizza, milk, vitamins, to be able to cook, to be used to, cook well, once a week, once a month, once a year, twice a week……
Repetition of the grammar and verbs taught in the previous module and making dialogues usingit.
Compliment of degree "de".

Module III
Grammar the complex sentence "suiran … danshi…."
Comparison – It is colder today than it was yesterday…..etc.
The Expression "chule….yiwai". (Besides)
Names of different animals.
Talking about Great Wall of China
Short stories

Module IV
Use of "huozhe" and "haishi"
Is he/she married?
Going for a film with a friend.
Having a meal at the restaurant and ordering a meal.

Module V
Shopping – Talking abut a thing you have bought, how much money you spent on it? How many kinds were there? What did you think of others?
Talking about a day in your life using compliment of degree "de". When you get up? When do you go for class? Do you sleep early or late? How is Chinese? Do you enjoy your life in the hostel?
Making up a dialogue by asking question on the year, month, day and the days of the week and answer them.

Examination Scheme:

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Components	CT1	CT2	C	I	V	A
Weightage (%)	20	20	20	20	15	5

C – Project + Presentation
I – Interaction/Conversation Practice

Text & References:

"Elementary Chinese Reader " Part-II Lesson 39-46

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VLSI DESIGN

Course Code: BEC 601 **Credit Units: 03**

Course Objective:

In the recent years, IC manufacturing technology has gone through dramatic evolution and changes, continuously scaling to ever smatter dimensions. This scaling has a double impact on the design of ICs. First, the complexity of the designs that can be put on a single die has increased dramatically which led to new design methodologies. At the same time, this plunge into deep submicron space causes devices to behave differently and brings challenging issues to forefront. This course along with the course of Digital Circuits and Systems II and Analog CMOS IC design will give you many of the basic essentials to work in the area of Circuit Design. Since this course takes the latest trends in the industry into account, you will find yourself at a definite edge.

Course Contents:

Module I: Devices and the wire

Diode, Dynamic and transient behavior of Diode, Diffusion capacitance, SPICE Diode model, MOSFET basic, depletion and enhancement device.MOSFET static behavior, Threshold voltage and its dependence on V_{SB} MOSFET Operation in resistive and saturation region, channel length modulation, Velocity saturation and its impact on sub micron devices, sub threshold conduction, Model for manual analysis, Equivalent resistance for MOSFET in (velocity) saturated region, comparison of equations for PMOS and NMOS.DYNAMIC behavior, Channel capacitance in different regions of operation, junction capacitance, Level 1 SPICE models for MOS transistors. The Wire, Interconnect parameters: resistance, capacitance and Inductance, Lumped RC model, Elmore Delay

Module II: CMOS Inverter

VTC of an ideal inverter, Switching Model of the CMOS inverter: NMOS /PMOS discharge and charge, VTC of CMOS inverter : PMOS and NMOS operation in various regions including velocity saturation, Switching threshold, (W/L)p/(W/L)n ratio for setting desired V_M with and without velocity saturation, Noise Margins, buffer.Ratioed logic: Pseudo NMOS inverter and PMOS to NMOS ratio for performance, tri-state inverter, Resistive load inverter.Load Capacitance calculations: fan out capacitance, self capacitance calculations: Miller effect, wire capacitance; Improving delay calculation with input slope, Propagation delay: first order analysis, analysis from a design perspective, sizing a chain of inverters for minimum delay, choosing optimum number of stages, Power, Energy and Energy Delay: Dynamic power consumption, Static power, Glitches and power dissipation due to direct path currents, power and delay trade off, Transistor sizing for energy minimization

Module III: Combinational circuits

CMOS LOGIC: Good 0 and Poor 0, series and parallel N and P switches, Two and Higher input NAND and NOR gates, Functions of the type (AB+C(D+E)) and their complements, XOR and XNOR gates, 2 input Multiplexer, Full Adder; Transistor sizing in CMOS logic for optimal delay, Pseudo NMOS NAND NOR and other gates and the transistor sizing, Introduction to DSVCL logic, CPL AND/NAND, OR/NOR, XOR/XNOR gates, Logical effort, Electrical Effort, Branching effort, Examples of sizing Combinational logic chains for minimum delay, Pass-transistor logic, pass gate configurations for NMOS and PMOS, 2 input and 4 input MUX, XOR, XNOR and implementation of general functions like AB+AB*C+A*C*, Robust and Efficient PTL Design, Delay of Transmission Gate chain.Dynamic CMOS design: Pre-charge and Evaluation, charge leakage, bootstrapping, charge sharing, Cascading Dynamic Gates, DOMINO Logic, Optimization of Domino Logic Gates, simple example circuit implementations of DOMINO logic.

Module IV: Sequential Logic circuits

Principle of Bistability, NAND and NOR based SR latch, and clocked SR Latch, JK latch, example of master

slave flip flop, CMOS D latch, MUX based Latches, master slave edge triggered register, Static timing, Analysis setup, hold time, clock skew, clock period, non ideal clocks, clock overlap, C2MOS register, TSPCR Register, Schmitt Trigger, Pipelining and NORA CMOS

Module V: Layout Design Rules
Introduction to CMOS Process technology, Latch up and its prevention Layout of CMOS inverter, CMOS NAND and NOR gates, Concept of Euler path, and stick diagrams for functions like (AB+E+CD)*,

Examination Scheme:

Components	A	CT	S/V/Q	HA	EE
Weightage (%)	5	15	5	5	70

CT: Class Test, HA: Home Assignment, S/V/Q: Seminar/Viva/Quiz, EE: End Semester Examination; Att: Attendance

Text & References:

Text
- Jan M Rabaey: Digital Integrated Circuits
- David Hodges et al: Analysis and Design of Digital ICs
- Kang: CMOS Digital ICs

Reference
- Weste and Harris: CMOS VLSI design
- Weste and Eshragian: Principles of CMOS VLSI Design

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DIGITAL SIGNAL PROCESSING

Course Code: BEC 602 **Credit Units: 03**

Course Objective:

The objective of the course in Digital signal processing is to provide the student with significant skills in general as well as advanced theories and methods for modification, analysis, detection and classification of analog and digital signals. Furthermore the objective is to give the student a broad knowledge of central issues regarding design, realisation and test of analog and in particular digital signal processing systems consisting of hardware and/or software components. The specialization in signal processing makes it possible to study practical or theoretic fields, ranging from mathematics/signal theory over algorithmic design to development of instruments based on hardware and/or software for real time signal

Course Contents:

Module I: Discrete time signals and systems in time domain
Classification of signal, signal processing operations, classification of systems, discrete time systems, examples of types of signal, sampling process, time domain characterization of LTI discrete- time systems, state space representation of LTI discrete time systems.

Module II: Discrete time signals in transform domain
DTFT, properties, applications, inverse DTFT, DFT, properties, applications, inverse DFT, Z-transform, properties, applications, inverse Z-transform, frequency response, transfer function, Fast Fourier transform algorithms: DIT algorithm, DIF algorithm.

Module III
Discrete time processing of continuous time signals: sampling, analog filter design, antiliasing filter design.

Module IV: Discrete time processing of discrete- time signals
Digital filters: Digital filter structure: FIR filter structure, IIR filter structure,Digital filter design: Impulse invariance method, bilinear transform method of IIR filter design, FIR filter design.

Examination Scheme:

Components	A	CT	S/V/Q	HA	EE
Weightage (%)	5	15	5	5	70

CT: Class Test, HA: Home Assignment, S/V/Q: Seminar/Viva/Quiz, EE: End Semester Examination; Att: Attendance

Text & References:

Text
- Prokis, Manolakis: Digital signal processing
- Oppenheim & Schaffer : Digital Signal Processing

Reference
- Fafael C. Gonzalez, Richrd E. Woods: Digital Image Processing
- Anil Kumar Jain Fundamentals of Digital Image Processing

MICROWAVE ENGINEERING

Course Code: BEC 603 **Credit Units: 03**

Course Objective:

This course deals with the microwaves. Microwaves are important when we are going to the high frequency regime. By studying this course students will be able to know about the microwave components and devices, microwave generators and their characteristics, microwave applications and measurement. Also they will be familier about the rectangular and circular waveguides, their equations and the modes existing in these waveguides.

Course Contents:

Module I: Introduction
Microwave frequencies, standard frequency bands, behaviour of circuits at conventional and microwave frequencies, microwave application.

Module II: Waveguide
Overview of guided waves, TE, TM and TEM modes, rectangular and cylindrical wave guide resonators, choice of the type of waveguide, waveguide problems.

Module III: Microwave Components and Devices
Scattering matrix and its properties, coupling probes, coupling loops, windows, waveguide tuners, termination, E-plane Tee, H-plane Tee, Magic Tee, Phase-Shifter, attenuators, Directional Coupler, Gunn diode, Resonator and circulators, IMPATT devices, TRAPATT.

Module IV: Microwave tubes
Transit-time effect, limitations of conventional tubes, Two-cavity and multi-cavity Klystrons, Reflex Klystron, TWT and Magnetrons.

Examination Scheme:

Components	A	CT	S/V/Q	HA	EE
Weightage (%)	5	15	5	5	70

CT: Class Test, HA: Home Assignment, S/V/Q: Seminar/Viva/Quiz, EE: End Semester Examination; Att:

Attendance

Text & References:

Text

- Microwave Devices and Circuits, Liao
- Microwave Principles, Herbert J Reich
- Microwaves, K.C. Gupta

Reference

- Microwave Techniques, D C Agrawal
- Elements of Microwave Engg, Chatterjee

POWER ELECTRONICS

Course Code: BEE 601 **Credit Units: 03**

Course Objective:

The course aims to introduce them to the theory of operation, analytical and circuit models and basic design concepts of Electric Power components and systems.

Course Contents:

Module I: Triggering Devices

Triggering devices, Unijunction Transistor, Characteristics and applications of UJT, Programmable Unijunction Transistor, DIAC, Silicon Controlled Switch, Silicon Unilateral Switch, silicon Silicon bilateral Switch, Shockley diode, GTO, MOSFET, Power diodes.

Module II: Thyristor Firing Circuits, Turn on systems

Two transistor model of Thyristor, Method of Triggering a thyristor, Thyristor Types, Requirement for triggering circuits, Thyristor Firing Circuits, Fullwave control of Ac with one thryristor, Light activated SCrs (LASCR), Control Circuit, dv/dt and di/dt protection of Thyristor, Pulse Transformer triggering, Firing SCR by UJT, TRIAC firing circuit, Phase control of SCR by pedestal and Ramp.

Module III: Controlled Rectifiers

Types of Converters, effect of inductive load, Commutating diode or freewheeling diode, controlled rectifiers, Bi phase half wave, single phase full wave phase controlled converter using bridge principle, harmonics.

Module IV: Inverters

Types of Inverters, Bridge Inverters, Voltage Source Inverters, Pulse Width Modulation Inverters, Current source Inverters.

Module V: AC Voltage Controllers

Types of AC voltage Controllers, AC Phase Voltage controllers, single Phase Voltage Controller with RL load, harmonic analysis of single phase full wave controller with RL load.

Module VI: DC to DC Converters
DC choppers, Chopper classification, two quadrant chopper, Four quadrant chopper.

Module VII: Industrial Applications
One shot Thyristor trigger Circuit, over voltage protection, simple battery charger, battery charging regulator, AC static switches, DC static switch

Examination Scheme:

Components	A	CT	S/V/Q	HA	EE
Weightage (%)	5	15	5	5	70

CT: Class Test, HA: Home Assignment, S/V/Q: Seminar/Viva/Quiz, EE: End Semester Examination; Att: Attendance

Text & References:

Text:
- J. Michael: Power Electronics: Principles and Applications
- M. H. Rashid: Power Electronics circuits

References*:*
- H. C. Rai, "Power Electronics Devices, Circuits, Systems and Application", Galgotia, 3rd Ed.
- P. S. Bimbhara, "Electrical Machinery, Theory Performance and Applications" Khanna Publications, 7th

MEASURMENT AND MEASURING INSTRUMENTS

Course Code: BEC 605 **Credit Units: 03**

Course Objective:
The objective of the course is to provide a brief knowledge of measurements and measuring instruments related to engineering. The basic idea of this course is to give the sufficient information of measurements in any kind of industry viz. electrical, electronics, mechanical etc.

Course Contents:

Module I: Basics of Measurement Systems
Elements of Generalized Measurement System; Static & Dynamic Characteristics of Instruments; Errors in Measurements – Sources and Types of Errors; Statistical Treatment of Data – Mean, Measures of Dispersion, Rejection of data based on confidence interval

Module II: Transducers
Classification; Selection of Transducers; Resistive Transducers – Potentiometer, Strain gauge, Rosettes, Thermistors and RTD; Capacitive Transducers – Measurement of Liquid level by change in variation of dielectric constant; Variable Inductance Transducers – self-generating type and passive type; Piezoelectric Transducers; Photoelectric Transducers; Digital Transducer

Module III: Measurement of Resistance, Inductance and Capacitance
D.C. Bridges: Wheatstone's bridge, Sensitivity & Limitations; Carey Foster Bridge; Kelvin double bridge; Megaohm Bridge.A.C. Bridges: Maxwell's Inductance Capacitance Bridge; Andersons Bridge; De Sauty's Bridge; Schering Bridge;

Module IV: Analog and Digital Meters
Analog meters : PMMC meters- construction, torque equation, ammeter shunts, multirange ammeter, voltmeter

multiplier, sensitivity, ohmmeters, multimeters; Construction & general equation of moving iron, electrodynamometer, hot wire instruments.Digital meters: Digital voltmeter – ramp type, integrating type, potentiometer type, Applications

Module V: Display Devices and Recorders
LED, LCD, Cold Cathode displays, Incandescent Displays, Fluorescent Displays, LVD, VDU,Cathode Ray Oscillioscope : Basic functioning, Measurement of Voltage, Current, Phase and Frequency.

Examination Scheme:

Components	A	CT	S/V/Q	HA	EE
Weightage (%)	5	15	5	5	70

CT: Class Test, HA: Home Assignment, S/V/Q: Seminar/Viva/Quiz, EE: End Semester Examination; Att: Attendance

Text & References:

Text:
- Electronic Instrumentation Technology by MMS Anand, PHI Pvt. Ltd., New Delhi Ed. 2005.
- Electronics Instrumentation by H.S. Kalsi TMH Ed. 2004.

References:
- Electronics Instrumentation & Measurement Techniques by W.D. Cooper & A.D. Helfrick, PHI 3rd Ed.
- Electronics Measurement & Instrumentation by Oliver & Cage Mc-Graw Hill.

DATA STRUCTURE AND IT

Course Code: BEC 606 Credit Units: 03

Course Objective:
The objective is to acquaint the students with the basics of networking. A structured approach to explain how networks work from the inside out is being covered. Data structure deals with organizing large amount of data in order to reduce space complexity and time requirement. This course gives knowledge of algorithms, different types of data structures and the estimation space and time complexity.

Course Contents:

Module I: Introduction :
Introduction to computer networks, evolution of computer networks and its uses, reference models, example networks,The physical layer: Theoretical basis for data communication, transmission media

Module II: The data link layer and medium access layer:
Data link layer design issues, error detection and correction, data link protocols, Channel allocation problem, multiple access protocols, ALOHA, CSMA/CD

Module III: The network layer and transport layer:
Network layer concepts, design issues, static and dynamic routing algorithms, flooding, distance vector routing, link state routing, distance vector routing, Ipv4,The transport services, elements of transport protocols, TCP and UDP, application layer: Brief introduction to presentation and session layer, DNS, E-mail

Module IV: Introduction to Data structures :Data structures:
Definition, Types. Algorithm design, Complexity, Time-Space Trade offs. Use of pointers in data structures.,Array Definition and Analysis, Representation of Linear Arrays in Memory, Traversing of Linear Arrays, Insertion And Deletion, Single Dimensional Arrays, Two Dimensional Arrays, Multidimensional

Arrays, Function Associated with Arrays, Character String in C, Character String Operations, Arrays as parameters, Implementing One Dimensional Array, Sparse matrix.

Module V: Introduction to Stacks and queue

Stack: Definition, Array representation of stacks, Operations Associated with Stacks- Push & Pop, Polish expressions, Conversion of infix to postfix, infix to prefix (and vice versa),Application of stacks recursion, polish expression and their compilation ,conversion of infix expression to prefix and postfix expression, Tower of Hanoi problem.Queue: Definition, Representation of Queues, Operations of queues- QInsert, QDelete, Priority Queues, Circular Queue, Deque.

Examination Scheme:

Components	A	CT	S/V/Q	HA	EE
Weightage (%)	5	15	5	5	70

CT: Class Test, HA: Home Assignment, S/V/Q: Seminar/Viva/Quiz, EE: End Semester Examination; Att: Attendance

Text & References:

Text:

- Computer networks: Tanenbaum, Andrew S, Prentice Hall
- Horowitz and Sahani, "Fundamentals of Data structures", Galgotia publications
- R.L. Kruse, B.P. Leary, C.L. Tondo, "Data structure and program design in C" PHI

References:

- Computer network protocol standard and interface: Uyless, Black
- Computer Networking: A Top-Down Approach Featuring the Internet (3rd Edition) by James F. Kurose
- J. P. Tremblay and P. G. Sorenson, Introduction to Data Structures with Applications, McGraw – Hill Computer Science Series, Mc-Graw – Hill New York, 1984
- Algorithms by Thomas H. Cormen, Charles E. Leiserson, Ronald L. Rivest, Published by Prentice-Hall India (1999).
- Data Structures Using C and C++ second edition by Yeddidyah Langsam, Moshe J.Augenstein, Aaron M. Tenen Baum, Published by Prentice-Hall India

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PROGRAMME STRUCTURE
Electronics & Communication Engineering

INFORMATION THEORY AND CODING

Course Code: BEC 607 **Credit Units: 03**

Course Objective:
This course introduces what is information and how to deal with information. Role of coding in communication and what type of different codes are used in communication system. It also introduces different entropies, channel capacity and purpose of encoding. It also deals with the basic algebra required for coding the information.

Course Contents:

Module I: Fundamental Limits in Information Theory
Measure of Information, Data Compaction, Discrete Memory less Channels, Relationship among different Entropies, Mutual information, Channel Capacity, Capacity of channel with symmetric noise structure BSC and BEC. Channel Coding Theorem, Differential Entropy and Mutual Information for Continuous Ensembles, Information Capacity Theorem.

Module II: Coding techniques
Source Coding: Instantaneous Codes, Source Coding Theorem, The Kraft Inequality and McMillan's Theorem, Shannon's Noiseless Coding Theorem, Shannon Fanon Coding, Huffman Coding, Arithmetic Coding, Lempel Ziv coding.Channel Coding: Code Rate, Decoding Rules, Hamming Distance, Bounds on M, Maximal Codes and Perfect Codes, Error Probabilities.

Module III: Introduction to Algebra for Information theory systems
Groups, Ring, Vector space and Fields, Linear Spaces, Linear Spaces over Binary Fields, Construction of Galois field GF (2m), Basic Properties of Galois Field GF (2m), Codes Derived from Hadamard Matrices.

Module IV: Error Correcting Codes
Linear Block Codes: Syndrome and Error detection, Minimum distance of block code, error detecting and Error correcting capability a block code.Cyclic Codes: Rings of Polynomials, Description of Cyclic codes, Encoding and Decoding of Cyclic Codes and its Circuits, Hamming Codes.

Examination Scheme:

Components	A	CT	S/V/Q	HA	EE
Weightage (%)	5	15	5	5	70

CT: Class Test, HA: Home Assignment, S/V/Q: Seminar/Viva/Quiz, EE: End Semester Examination; Att: Attendance

Text & References:

Text
- F.M. Reza: Information Theory, McGraw Hill
- ShuLin & J Costeib: Error Control Coding, (PHI)

Reference
- Dass, Mullick & Chatterjee : Digital Communication, John Wiley, Ed. 1992

VLSI DESIGN LAB

Course Code: BEC 621 **Credit Units: 01**

List of Experiments:

1. MOSFET characteristics with varying V_{GS} for both pmos and nmos.
2. Effect on VTC of CMOS inverter with variation of W and L.
3. Transient analysis of CMOS inverter with varying capacitive load, W and L.
4. Rise time, Fall time power dissipation, propagation delay calculation of CMOS inverter with the variation ofcapacitive load, W and L.
5. NOR and NAND gate - Transient analysis
6. XOR/XNOR gate - Transient analysis
7. 2:1 MUX and XOR gate with P.T.L.- Transient analysis
8. D type latch and flip flop - Transient analysis
9. 3 input NAND gate implementation with DOMINO (precharge and evaluation)
10. 4 inverter chain to derive capacitive load

Examination Scheme:

IA				EE	
A	PR	LR	V	PR	V
5	10	10	5	35	35

Note: IA –Internal Assessment, EE- External Exam, PR- Performance, LR – Lab Record, V – Viva.

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DIGITAL SIGNAL PROCESSING LAB

Course Code: **BEC 622** **Credit Units: 01**

List of Experiments:

1. To generate unit step sequence, exponential sequence and sinusoidal sequence
2. To determine convolution of two given sequences.
3. To plot the frequency response of an FIR system
4. To compute DFT and IDFT of a given sequence
5. To determine the circular convolution of two given sequences
6. To design various analog filters
7. To design FIR filter using Hamming window
8. To convert Analog filter into Digital Filter using bilinear transformation
9. To determine z and inverse z transform of a given sequence
10. To verify 8 points FFT algorithm in decimation in time (DIT) & decimation in frequency (DIF).
11. To determine the filter coefficient using Ramez exchange algorithm.
12. To design an IIR digital filter and its parallel realization.

Examination Scheme:

IA				EE	
A	**PR**	**LR**	**V**	**PR**	**V**
5	10	10	5	35	35

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Note: IA –Internal Assessment, EE- External Exam, PR- Performance, LR – Lab Record, V – Viva.

MICROWAVE ENGINEERING LAB

Course Code: BEC 623 **Credit Units: 01**

List of Experiments:

1. To study the characteristics of reflex klystron.
2. To study the characteristic of Gunn diode.
3. To measure frequency and guided wavelength of a microwave signal.
4. To measure the impedance of a given load.
5. To measure the dielectric constant of the given sample.
6. To measure various parameters of a directional coupler.
7. To study the characteristic and functions of an isolator.
8. To study the characteristic and functions of a circulator.
9. To study the characteristic and functions of various tees.

Examination Scheme:

IA				EE	
A	**PR**	**LR**	**V**	**PR**	**V**
5	10	10	5	35	35

Note: IA –Internal Assessment, EE- External Exam, PR- Performance, LR – Lab Record, V – Viva.

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COMMUNICATION SKILLS - IV

Course Code: BCS 601 **Credit Units: 01**

Course Objective:
To enhance the skills needed to work in an English-speaking global business environment.

Course Contents:

Module I: Business/Technical Language Development
Advanced Grammar: Syntax, Tenses, Voices
Advanced Vocabulary skills: Jargons, Terminology, Colloquialism
Individualised pronunciation practice

Module II: Social Communication
Building relationships through Communication
Communication, Culture and Context
Entertainment and Communication
Informal business/ Technical Communication

Module III: Business Communication

Reading Business/ Technical press
Listening to Business/ Technical reports (TV, radio)
Researching for Business /Technology

Module IV: Presentations
Planning and getting started
Design and layout of presentation
Information Packaging
Making the Presentation

Examination Scheme:

Components	CT1	CT2	CAF	V	GD	GP	A
Weightage (%)	20	20	25	10	10	10	5

CAF – Communication Assessment File,GD – Group Discussion,GP – Group Presentation

Text & References:

Text
- Business Vocabulary in Use: Advanced Mascull, Cambridge
- Business Communication, Raman – Prakash, Oxford
- Business Communications, Rodgers, Cambridge

Reference
- Working in English, Jones, Cambridge
- New International Business English, Jones/Alexander, Cambridge

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BEHAVIOURAL SCIENCE - VI
(STRESS AND COPING STRATEGIES)

Course Code: BSS 604 **Credit Units: 01**

Course Objective:

To develop an understanding the concept of stress its causes, symptoms and consequences.
To develop an understanding the consequences of the stress on one's wellness, health, and work performance.

Course Contents:

Module I: Stress
Meaning & Nature
Characteristics
Types of stress

Module II: Stages and Models of Stress
Stages of stress
The physiology of stress
Stimulus-oriented approach.
Response-oriented approach.
The transactional and interact ional model.
Pressure – environment fit model of stress.

Module III: Causes and symptoms of stress
Personal
Organizational
Environmental

Module IV: Consequences of stress
Effect of stress on performance
Individual and Organizational consequences with special focus on health

Module V: Strategies for stress management
Importance of stress management
Healthy and Unhealthy strategies
Peer group and social support
Happiness and well-being

Module VI: End-of-Semester Appraisal
Viva based on personal journal
Assessment of Behavioural change as a result of training
Exit Level Rating by Self and Observer

Examination Scheme:

Components	SAP	A	Mid Term Test (CT)	VIVA	Journal for Success (JOS)
Weightage (%)	20	05	20	30	25

Text & References:

Text

- Blonna, Richard; Coping with Stress in a Changing World: Second edition
- Pestonjee, D.M, Pareek, Udai, Agarwal Rita; Studies in Stress And its Management

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Reference

- Pestonjee, D.M.; Stress and Coping: The Indian Experience
- Clegg, Brian; Instant Stress Management – Bring calm to your life now

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FRENCH - VI

Course Code: FLT 601 **Credit Units: 02**

Course Objective:

To strengthen the language of the students both in oral and written so that they can:
i) express their sentiments, emotions and opinions, reacting to information, situations;
ii) narrate incidents, events;
iii) perform certain simple communicative tasks.

Course Contents:

Module D: pp. 157 – 168 – Unité 12

Unité 12: s'évader

1. présenter, caractériser, définir
2. parler de livres, de lectures
3. préparer et organiser un voyage
4. exprimer des sentiments et des opinions
5. téléphoner
6. faire une réservation

Contenu grammatical:

1. proposition relative avec pronom relatif "qui", "que", "où" - pour caractériser
2. faire + verbe

Examination Scheme:

Components	CT1	CT2	C	I	V	A
Weightage (%)	20	20	20	20	15	5

C – Project + Presentation
I – Interaction/Conversation Practice

Text & References:

- le livre à suivre : Campus: Tome 1

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GERMAN - VI

Course Code: FLG 601 **Credit Units: 02**

Course Objective:
To enable the students to converse, read and write in the language with the help of the basic rules of grammar, which will later help them to strengthen their language.
To give the students an insight into the culture, geography, political situation and economic opportunities available in Germany
Introduction to Advanced Grammar and Business Language and Professional Jargon

Course Contents:

Module I: Adjective endings
Adjective endings in all the four cases discussed so far
Definite and indefinite articles
Cases without article

Module II: Comparative adverbs
Comparative adverbs as and like

Module III: Compound words
To learn the structure of compound words and the correct article which they take
Exploring the possibility of compound words in German

Module IV: Infinitive sentence
Special usage of 'to' sentences called zu+ infinitive sentences

Module V: Texts
A Dialogue: 'Ein schwieriger Gast'
A text: 'Abgeschlossene Vergangenheit'

Module VI: Comprehension texts
Reading and comprehending various texts to consolidate the usage of the constructions learnt so far in this semester.

Module VII: Picture Description
Firstly recognize the persons or things in the picture and identify the situation depicted in the picture;
Secondly answer questions of general meaning in context to the picture and also talk about the personal experiences which come to your mind upon seeing the picture.

Examination Scheme:

Components	CT1	CT2	C	I	V	A
Weightage (%)	20	20	20	20	15	5

C – Project + Presentation
I – Interaction/Conversation Practice

Text & References:

Text
- Wolfgang Hieber, Lernziel Deutsch
- Hans-Heinrich Wangler, Sprachkurs Deutsch
- Schulz Griesbach, Deutsche Sprachlehre für Ausländer
- P.L Aneja, Deutsch Interessant- 1, 2 & 3

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Reference

- Rosa-Maria Dallapiazza et al, Tangram Aktuell A1/1,2
- Braun, Nieder, Schmöe, Deutsch als Fremdsprache 1A, Grundkurs

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SPANISH – VI

Course Code: FLS 601 **Credit Units: 02**

Course Objective:

To enable students acquire working knowledge of the language; to give them vocabulary, grammar, voice modulations/intonations to handle everyday Spanish situations in Present as well as in Present Perfect Tense with ease.

Course Contents:

Module I
Revision of the earlier modules

Module II
Present Perfect Tense

Module III
Commands of irregular verbs

Module IV
Expressions with **Tener que** and **Hay que**

Module V
En la embajada
Emergency situations like fire, illness, accident, theft

Examination Scheme:

Components	CT1	CT2	C	I	V	A
Weightage (%)	20	20	20	20	15	5

C – Project + Presentation
I – Interaction/Conversation Practice

Text & References:

- Español, En Directo I A
- Español Sin Fronteras

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CHINESE – VI

Course Code: FLC 601 **Credit Units: 02**

Course Objective:

Chinese emperor Qin Shi Huang – Ti who built the great wall of China also built a network of 270 palaces, linked by tunnels, and was so afraid of assassination that he slept in a different palace each night. The course aims at familiarizing the student with the basic aspects of speaking ability of Mandarin, the language of Mainland China. The course aims at training students in practical skills and nurturing them to interact with a Chinese person.

Course Contents:

Module I
Drills
Dialogue practice
Observe picture and answer the question.
Pronunciation and intonation.
Character writing and stroke order.

Module II
Going out to see a science exhibition
Going to the theatre.
Train or Plane is behind schedule.
Indian Economy-Chinese Economy
Talking about different Seasons of the Year and Weather conditions. Learning to say phrases like-spring, summer, fall, winter, fairly hot, very cold, very humid, very stuffy, neither hot nor cold, most comfortable, pleasant …. etc.

Module III
Temperature – how to say – What is the temperature in May here?

- How is the weather in summer in your area?
- Around 30 degrees
- Heating, air-conditioning
- Is winter is Shanghai very cold?

Talking about birthdays and where you were born?
The verb "shuo" (speak) saying useful phrases like speak very well, do not speak very well, if speak slowly then understand if speak fast then don't understand, difficult to speak, difficult to write, speak too fast, speak too slow, listen and can understand, listen and cannot understand … etc.
Tell the following in Chinese – My name is …. I was born in … (year). My birthday is …… Today is … (date and day of the week). I go to work (school) everyday. I usually leave home at . (O'clock). In the evening, I usually ……. (do what)? At week end, I ……. On Sundays I usually …… It is today….. It will soon be my younger sisters birthday. She was born in ….. (year). She lives in ……. (where). She is working (or studying)…… where… She lives in …….. (where.)

Examination Scheme:

Components	CT1	CT2	C	I	V	A
Weightage (%)	20	20	20	20	15	5

C – Project + Presentation
I – Interaction/Conversation Practice

Text & References:

- Elementary Chinese Reader Part-2, 3; Lesson 47-54

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PROGRAMME STRUCTURE
Electronics & Communication Engineering

RADAR AND SATELLITE COMMUNICATIONS

Course Code: BEC 701 **Credit Units: 03**

Course Objective:
This course builds basic knowledge of different types of Radar systems and satellite communication along with link designing & application. It also covers different modulation schemes & channels used.

Course Contents:

Module I: Introduction to Radar
Principle of detection and ranging, Radar frequencies and bands. Applications, Radar block diagram and operation. Radar Range Equation : Range prediction, Minimum detectable signal, Receiver noise SNR, Integration of radar pulses, Radar cross section of targets, Transmitter Power, PRF and system losses & Propagation effects.

Module II: CW FM Radar
Doppler effect, CW Radar, Frequency-modulated CW Radar, Multiple-frequency CW Radar. MTI and Pulse Doppler Radar: MTI delay lines, Delay line Cancellers, Coherent and Non-Coherent MTI, Pulse Doppler Radar.

Module III: Introduction to Satellite
Communication satellites, Orbiting satellites, Frequencies and bands, Satellite multiple access formats. Satellite Channel: Power flow, Polarization, Atmospheric losses, Receiver noise, CNR, Satellite link analysis for uplinks and downlinks. Overview of Coaxial cable system and optical Network (SONET); Overview of WLL (Wireless loop)

Module IV: Satellite Transponder
Transponder model, Satellite signal processing RF-RF translation, IF demodulation.

Module V: Multiple-Access
FDMA; amplification with multiple FDMA carriers, AM/FM Conversion with FDMA, Switched FDMA, Synchronization, SS-TDMA; CDMA; DS CDMA, Frequency- hopped, CDMA. Carrier recovery & bit timing. Satellite link budget analysis

Examination Scheme:

Components	A	CT	S/V/Q	HA	EE
Weightage (%)	5	15	5	5	70

CT: Class Test, HA: Home Assignment, S/V/Q: Seminar/Viva/Quiz, EE: End Semester Examination; Att: Attendance

Text & References:

Text
- Introduction to Radar Systems - M.I. Skolnik
- Radar Fundamentals - G.J. Wheeler.
- Radar Engineering - D.G. Rink
- Satellite Communication - R.M. Gagliardi

Reference
- Satellite Communication - T. Pratt & C.W. Boston
- Satellite Communication System Design Principles - M. Richharia

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DIGITAL IMAGE PROCESSING

Course Code: BEC702 **Credit Units: 03**

Course Objective:
The syllabus is divided into four parts, the first one deal with introduction and fundamental concepts of digital image processing and image enhancement in spatial domain. Second module of the syllabus deals with image processing operations like image enhancement in frequency domain, image restoration respectively. Third and fourth module deals with applications like Image Compression and Object recognition respectively The syllabus helps a student perfect image processing fundamentals. Apart from it image processing application are discussed in detail.

Course Contents:

Module I: Introduction and Digital Image Fundamentals
The origins of Digital Image Processing, Examples of Fields that Use Digital Image Processing, Fundamentals Steps in Image Processing, Elements of Digital Image Processing Systems, Image Sampling and Quantization, Some basic relationships like Neighbors, Connectivity, Distance Measures between pixels, Linear and Non Linear Operations. Image Enhancement in the Spatial Domain**:** Some basic Gray Level Transformations, Histogram Processing, Enhancement Using Arithmetic and Logic operations, Basics of Spatial Filters, Smoothening and Sharpening Spatial Filters, Combining Spatial Enhancement Methods.

Module II: Image Enhancement in the Frequency Domain
Introduction to Fourier Transform and the frequency Domain, Smoothing and Sharpening Frequency Domain Filters, Homomorphic Filtering. Image Restoration: A model of The Image Degradation / Restoration Process, Noise Models, Restoration in the presence of Noise Only Spatial Filtering, Pereodic Noise Reduction by Frequency Domain Filtering, Linear Position-Invarient Dedradations, Estimation of Degradation Function, Inverse filtering, Wiener filtering, Constrained Least Square Filtering, Geometric Mean Filter, Geometric Transformations.

Module III: Image Compression
Coding, Interpixel and Psychovisual Redundancy, Image Compression models, Elements of Information Theory, Error free comparison, Lossy compression, Image compression standards.Image Segmentation*:* Detection of Discontinuities, Edge linking and boundary detection, Thresholding, Region Oriented Segmentation, Motion based segmentation

Module IV: Representation and Description
Representation, Boundary Descriptors, Regional Descriptors, Use of Principal Components for Description, Introduction to Morphology, Some basic Morphological Algorithms. Object Recoginition**:** Patterns and Pattern Classes, Decision-Theoretic Methods, Structural Methods.

Examination Scheme:

Components	A	CT	S/V/Q	HA	EE
Weightage (%)	5	15	5	5	70

CT: Class Test, HA: Home Assignment, S/V/Q: Seminar/Viva/Quiz, EE: End Semester Examination; Att: Attendance

Text & References:
Text:
- Rafael C. Conzalez & Richard E. Woods, 2002, "Digital Image Processing", 2nd edition, Pearson Education.
- A.K. Jain, 1989, "Fundamental of Digital Image Processing", PHI.

References:

- Bernd Jahne, 2002, "Digital Image Processing", 5th Ed., Springer.
- William K Pratt, 2001, "Digital Image Processing: Piks Inside", John Wiley & Sons.

ANALOG CMOS IC DESIGN

Course Code: BEC 703 **Credit Units: 03**

Course Objective:

In the VLSI design course, the student was initiated in the world of circuit design from a digital perspective. In this course, transistor modeling is emphasized from a purely analog point of view. Some of the world's highest paid jobs in Electronics based industry are in Analog Circuit Design. This course will serve as an introduction to what Analog Design is like. Since CMOS is the technology being used most of the time, only CMOS technology is being included here. A serious learner is recommended to study BJT based circuits as well.

Course Contents:

Module I: MOSFET Basics

MOSFET channel length modulation, small signal model, transconductance, T model, biasing a MOSFET at DC, four resistor biasing, modeling body effect, body transconductance, short channel effects, Coupling and Bypass capacitors, AC equivalent circuit

Module II: Single Stage Amplifiers, Differential Amplifier and Current Mirrors

Common source, common gate, source follower: input resistance, output resistance and voltage gain, high frequency model, MOSFET Unity Gain,High and Low Frequency response of CS Amplifier, Active loads, CS source with resistive load, diode connected load, current source load, MOSFET current source, Open circuit Time constants, Miller theorem, Cascode amplifier, Results for CS, CD, CB configurations taking r_0 into account,Current mirror, Cascode Current mirror, Active Current Mirrors: Large and small signal Analysis,Differential Pair: Common mode and Differential input voltage**,** Large signal Operation and Small signal Operation, effect of r_0, CMRR, effect of R_D mismatch and g_m mismatch, Input Offset Voltage of MOS pair, Frequency response of resistively loaded and actively loaded MOS Differential pair

Module III: Operational Amplifiers

Ideal Op Amp, Compensation of Op Amp, One stage Op Amp, Two stage CMOS Op Amp, Folded Cascode Op Amp: voltage gain, Frequency response and slew rate, Noise in Op Amps, power Supply Rejection Ratio

Module IV: Noise, Stability and Frequency Compensation

Statistical Characteristics of Noise, Types of Noise, Noise in single stage amplifiers, Noise in Differential pair Feedback review, Loop Gain, Transfer Function of feedback amplifier, effect of feedback on Amplifier poles, Miller Compensation and Pole Splitting, multipole system, frequency compensation, compensation of two stage op amp

Examination Scheme:

Components	A	CT	S/V/Q	HA	EE
Weightage (%)	5	15	5	5	70

CT: Class Test, HA: Home Assignment, S/V/Q: Seminar/Viva/Quiz, EE: End Semester Examination; Att: Attendance

Text & References:

Text

- Sedra and Smith: Microelectronic Circuits
- Razavi Design of Analog CMOS Integrated Circuits

Reference

- Gray, Hurst, Lewis and Meyer: Analysis and design of Analog Ics
- Allen and Holberg: CMOS Analog Design

RADAR AND SATELLITE COMMUNICATIONS LAB

Course Code: BEC 721 **Credit Units: 01**

List of Experiments:

1. To study AM transmitter and receiver.

2. To study FM transmitter and receiver.

3. To implement the following circuits.
   - AM Transmitter
   - FM Transmitter
   - AM Receiver
   - FM Receiver
   - Remote Control
   - Wireless Mic System

4. To study RF portion of satellite receiver.
   - Study of dish antenna and section N.B section
   - Study of tuner
   - Study of R.F modulator section

5. To study the base-band portion of satellite receiver
   - study of video section
   - study of sound section
   - study of signal indictor
   - study of power supply section

Examination Scheme:

IA				EE	
A	**PR**	**LR**	**V**	**PR**	**V**
5	10	10	5	35	35

Note: IA –Internal Assessment, EE- External Exam, PR- Performance, LR – Lab Record, V – Viva.

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PROGRAMME STRUCTURE
Electronics & Communication Engineering

DIGITAL IMAGE PROCESSING LAB

Course Code: **BEC 722** **Credit Units: 01**

List of Experiments:

Note: Simulate all the programs using MATLAB

1. To study about the basic image processing tools.
2. To write program for Histogram processing.
3. To write program for lossy compression.
4. To write program for lossless compression.
5. To write algorithm for different morphology operations and generate programs.
6. To write program for inverse filtering.
7. To write program for least square filtering.

Examination Scheme:

IA				EE	
A	**PR**	**LR**	**V**	**PR**	**V**
5	10	10	5	35	35

Note: IA –Internal Assessment, EE- External Exam, PR- Performance, LR – Lab Record, V – Viva.

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PROGRAMME STRUCTURE
Electronics & Communication Engineering

ANALOG CMOS IC DESIGN LAB

Course Code: **BEC 723** **Credit Units: 01**

List of Experiments:

1. Plot the IV characteristics of Id vs Vds for varying Vgs
2. Design and simulate single stage amplifiers
3. Repeat experiment 1 including body effect.
4. Design and simulate current mirror
5. Design and simulate voltage source and voltage sink amplifier
6. Design and simulate Differential amplifier
7. Design and simulate Darlington pair
8. Design and simulate an OP amp
9. Simulate the operation of a CMOS op-amp with SPICE and find its frequency response.
10. Simulate and plot the frequency response of a switched capacitor filter circuit using SPICE.

Examination Scheme:

IA				EE	
A	**PR**	**LR**	**V**	**PR**	**V**
5	10	10	5	35	35

Note: IA –Internal Assessment, EE- External Exam, PR- Performance, LR – Lab Record, V – Viva.

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PROGRAMME STRUCTURE
Electronics & Communication Engineering

INDUSTRIAL TRAINING (Evaluation)

Course Code: BEC 750 **Credit Units: 03**

Methodology:

Practical training is based on the theoretical subjects studied by students. It can be arranged within the college or in any related industrial unit. The students are to learn various industrial, technical and administrative processes followed in the industry. In case of on-campus training the students will be given specific task of fabrication/assembly/testing/analysis. On completion of the practical training the students are to present a report covering various aspects learnt by them and give a presentation on same.

Examination Scheme:

Feedback from industry/work place	20
Training Report	40
Viva	15
Presentation	25
Total	**100**

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PROGRAMME STRUCTURE
Electronics & Communication Engineering

COMMUNICATION SKILLS - V

Course Code: **BCS701** **Credit Units: 01**

Course Objective:
To facilitate the learner with Academic Language Proficiency and make them effective users of functional language to excel in their profession.

Course Contents:

Module I
Introduction to Public Speaking
Business Conversation
Effective Public Speaking
Art of Persuasion

Module II: Speaking for Employment
Types of Interview

Styles of Interview
Facing Interviews-Fundamentals and Practice Session
Conducting Interviews- Fundamentals and Practice Session
Question Answer on Various Dimensions

Module III
Resume Writing
Covering Letters
Interview Follow Up Letters

Module IV: Basic Telephony Skills
Guidelines for Making a Call
Guidelines for Answering a Call

Module V: Work Place Speaking
Negotiations
Participation in Meetings
Keynote Speeches

Examination Scheme:

Components	CT1	CT2	CAF	V	GD	GP	A
Weightage (%)	20	20	25	10	10	10	5

CAF – Communication Assessment File
GD – Group Discussion
GP – Group Presentation

Text & References:

Text

- Jermy Comfort, Speaking Effectively, et.al, Cambridge
- Krishnaswamy, N, Creative English for Communication, Macmillan
  \

Reference

- Raman Prakash, Business Communication, Oxford.
- Taylor, Conversation in Practice

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Electronics & Communication Engineering

BEHAVIOURAL SCIENCE - VII
(INDIVIDUAL, SOCIETY AND NATION)

Course Code: BSS 704 **Credit Units: 01**

Course Objective:

This course aims at enabling students towards:Understand the importance of individual differences..Better understanding of self in relation to society and nation,Facilitation for a meaningful existence and adjustment in society,Inculcating patriotism and national pride

Course Contents:

Module I: Individual differences & Personality
Personality: Definition& Relevance
Importance of nature & nurture in Personality Development
Importance and Recognition of Individual differences in Personality
Accepting and Managing Individual differences (adjustment mechanisms)
Intuition, Judgment, Perception & Sensation (MBTI)
BIG5 Factors

Module II: Managing Diversity
Defining Diversity
Affirmation Action and Managing Diversity
Increasing Diversity in Work Force
Barriers and Challenges in Managing Diversity

Module III: Socialization
Nature of Socialization
Social Interaction
Interaction of Socialization Process
Contributions to Society and Nation

Module IV: Patriotism and National Pride
Sense of pride and patriotism
Importance of discipline and hard work
Integrity and accountability

Module V: Human Rights, Values and Ethics
Meaning and Importance of human rights
Human rights awareness
Values and Ethics- Learning based on project work on Scriptures like- Ramayana, Mahabharata, Gita etc.

Module VI: End-of-Semester Appraisal
Viva based on personal journal
Assessment of Behavioural change as a result of training
Exit Level Rating by Self and Observer

Examination Scheme:

Components	SAP	A	Mid Term Test (CT)	VIVA	Journal for Success (JOS)
Weightage (%)	20	05	20	30	25

Text & References:

Text

- Davis, K. Organizational Behaviour,
- Bates, A. P. and Julian, J.: Sociology - Understanding Social Behaviour

- Dressler, David and Cans, Donald: The Study of Human Interaction
- Lapiere, Richard. T – Social Change

Reference

- Lindzey, G. and Borgatta, E: Sociometric Measurement in the Handbook of Social Psychology, Addison – Welsley, US.
- Rose, G.: Oxford Textbook of Public Health, Vol.4, 1985.
- Robbins O.B.Stephen;. Organizational Behaviour

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PROGRAMME STRUCTURE

Electronics & Communication Engineering

FRENCH – VII

Course Code: FLT 701 **Credit Units: 02**

Course Objective:

Revise the portion covered in the first volume, give proper orientation in communication and culture.

Course Contents:

Module A: Unités 1 – 3: pp. 06 - 46

Contenu lexical:

Unité 1: Rédiger et présenter son curriculum vitae
Exprimer une opinion
Caractériser, mettre en valeur
Parler des rencontres, des lieux, des gens

Unité 2: Imaginer - Faire des projets
Proposer - conseiller
Parler des qualités et des défauts
Faire une demande écrite
Raconter une anecdote
Améliorer son image

Unité 3: Exprimer la volonté et l'obligation
Formuler des souhaits
Exprimer un manque/un besoin
Parler de l'environnement, des animaux, des catastrophes naturelles

Contenu grammatical:

1. Le passé : passé composé/imparfait
2. Pronoms compléments directs/indirects, y/en (idées/choses)
3. Propositons relatives introduites par qui, que, où
4. Comparatif et superlatif
5. Le conditionnel présent
6. Situer dans le temps
7. Féminin des adjectifs
8. La prise de paroles : expressions
9. Le subjonctif : volonté, obligation

Examination Scheme:

Components	CT1	CT2	C	I	V	A
Weightage (%)	20	20	20	20	15	5

C – Project + Presentation
I – Interaction/Conversation Practice

Text & References:

- le livre à suivre : Campus: Tome 2

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PROGRAMME STRUCTURE
Electronics & Communication Engineering
GERMAN - VII

Course Code: FLG 701 **Credit Units: 02**

Course Objective:
To enable the students to converse, read and write in the language with the help of the basic rules of grammar, which will later help them to strengthen their language.
To give the students an insight into the culture, geography, political situation and economic opportunities available in Germany
Introduction to Advanced Grammar and Business Language and Professional Jargon

Course Contents:

Module I: Dass- Sätze
Explain the use of the conjunction "-that", where verb comes at the end of the sentence

Module II: Indirekte Fragesätze
To explain the usage of the "Question Pronoun" as the Relative Pronoun in a Relative Sentence, where again the verb falls in the last place in that sentence.

Module III: Wenn- Sätze
Equivalent to the conditional "If-" sentence in English. Explain that the verb comes at the end of the sentence.

Module IV: Weil- Sätze
Explain the use of the conjunction "because-" and also tell that the verb falls in the last place in the sentence.

Module V: Comprehension texts
Reading and comprehending various texts to consolidate the usage of the constructions learnt so far in this semester.

Module VI: Picture Description
Firstly recognize the persons or things in the picture and identify the situation depicted in the picture;
Secondly answer questions of general meaning in context to the picture and also talk about the personal experiences which come to your mind upon seeing the picture.

Examination Scheme:

Components	CT1	CT2	C	I	V	A
Weightage (%)	20	20	20	20	15	5

C – Project + Presentation
I – Interaction/Conversation Practice

Text & References:

Text
- Wolfgang Hieber, Lernziel Deutsch
- Hans-Heinrich Wangler, Sprachkurs Deutsch
- Schulz Griesbach, Deutsche Sprachlehre für Ausländer
- P.L Aneja, Deutsch Interessant - 1, 2 & 3

Reference
- Rosa-Maria Dallapiazza et al, Tangram Aktuell A1/1,2
- Braun, Nieder, Schmöe, Deutsch als Fremdsprache 1A, Grundkurs

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PROGRAMME STRUCTURE
Electronics & Communication Engineering
SPANISH - VII

Course Code: FLS 701 **Credit Units: 02**

Course Objective:
To enable students acquire working knowledge of the language; to give them vocabulary, grammar, expressions used on telephonic conversation and other situations to handle everyday Spanish situations with ease.

Course Contents:

Module I
Revision of earlier semester modules

Module II
Zodiac signs. More adjectives…to describe situations, state of minds, surroundings, people and places.

Module III
Various expressions used on telephonic conversation (formal and informal)

Module IV
Being able to read newspaper headlines and extracts (Material to be provided by teacher)

Module V
Negative commands (AR ending verbs)

Module VI
Revision of earlier sessions and introduction to negative ER ending commands, introduction to negative IR ending verbs

Examination Scheme:

Components	CT1	CT2	C	I	V	A
Weightage (%)	20	20	20	20	15	5

C – Project + Presentation
I – Interaction/Conversation Practice

Text & References:

Text
- Español En Directo I A, 1B
- Español Sin Fronteras

Reference
- Material provided by the teacher from various sources

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Electronics & Communication Engineering

CHINESE – VII

Course Code: FLC 701 **Credit Units: 02**

Course Objective:

The story of Cinderella first appears in a Chinese book written between 850 and 860 A.D. The course aims at familiarizing the student with the basic aspects of speaking ability of Mandarin, the language of Mainland China. The course aims at training students in practical skills and nurturing them to interact with a Chinese person.

Course Contents:

Module I
Drills
Dialogue practice
Observe picture and answer the question.
About china part –I Lesson 1, 2.

Module II
Pronunciation and intonation
Character Writing and stroke order.

Module III
Ask someone what he/she usually does on weekends?
Visiting people, Party, Meeting, After work….etc.

Module IV
Conversation practice
Translation from English to Chinese and vise-versa.
Short fables.

Module V
A brief summary of grammar.
The optative verb "yuanyi".
The pronoun "ziji".

Examination Scheme:

Components	CT1	CT2	C	I	V	A
Weightage (%)	20	20	20	20	15	5

C – Project + Presentation
I – Interaction/Conversation Practice

Text & References:

- "Kan tu shuo hua" Part-I Lesson 1-7

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Electronics & Communication Engineering

ANTENNA AND WAVE PROPOGATION

Course Code: BEC 801 **Credit Units: 03**

Course Objective:

The purpose of this course is to provide a thorough introduction to antenna systems with an in depth study of various types & performance parameters for antenna.

Course Contents:

Module I: Antenna

Antenna Principles: Potential Functions & Electromagnetic Field, Current Elements, Radiation from Monopole & Half Wave Dipole, power radiated by current element, radiation resistance. Network Theorems, Directional Properties of Dipole Antenna. Antenna Gain, Effective Area, Antenna Terminal Impedance, Practical Antennas and Methods of Excitation, Antenna Temperature and Signal to Noise Ratio.

Module II: Antenna Arrays

Antennas Arrays: Two Element Array, Horizontal Patterns in Broadcast Arrays, Linear Arrays, Multiplication of patterns, effect of the earth on vertical patterns, Binomial array

Module III: Wave Propagation

Modes of Propagation, Plane Earth Reflection, Space wave and Surface Wave, Reflection and refraction waves by the Ionosphere Tropospheric Wave. Ionosphere Wave Propagation in the Ionosphere, Virtual Height, MUF Critical frequency, Skip Distance, Duct Propagation, Space wave

Module IV: Practical Antennas

VLF and LF transmitting antennas, effect of antenna height, Field of short dipole, electric field of small loop antenna, Directivity of circular loop antenna with uniform current, Yagi-Uda array: Square corner yagi-uda hybrid, circular polarization Rhombic Antenna: Weight and Leg length Parabolic Reflectors: Properties, Comparison with corner reflectors Horn Antenna: Length and Aperture. Introduction to Turstile Antenna Effect of ground on antenna performance.Broadband Antenna: Frequency independent concept, RUMSEY's Principle, Frequency independent planar log spiral antenna, Frequency independent conical spiral Antenna.

Module V: Antenna Measurements

Radiation Pattern measurement, Distance requirement for uniform phase, uniform field amplitude requirement, Introduction to phase measurement; Gain Measurement: Comparison method, Near field method, Introduction to current distribution measurement, Measurement of antenna efficiency, measurement of Noise figure and noise temperature of an antenna polarization measurement.

Examination Scheme:

Components	A	CT	S/V/Q	HA	EE
Weightage (%)	5	15	5	5	70

CT: Class Test, HA: Home Assignment, S/V/Q: Seminar/Viva/Quiz, EE: End Semester Examination; Att: Attendance

Text & References:

Text:

1. Jordan Edwards C. and Balmain Keith G.S "Electromagnetic Waves and Radiating Systems"/ Prentice Hall

(India)
2. Kraus, John D. & Mashefka, Ronald J. / "Antennas: For All Applications" / Tata McGraw Hill, 3rd Ed.

References:

1. Prasad, K.D./ "Antennas and Wave Propagation"/ Khanna Publications
2. Collin, R. / "Antennas and Radiowave Propagation" / Tata McGraw-Hill
3. Hayt Jr. William H./ "Engineering Electromagnetic "/ Tata McGraw-Hill
4. Das, Annaparna & Das, Sisir K. / "Microwave Engineering"/ Tata McGraw Hill.
5. Roy, Sitesh Kumar & Mitra, Monojit / "Microwave Semiconductor Devices" / Prentice Hall (India).

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PROGRAMME STRUCTURE
Electronics & Communication Engineering

EMBEDDED SYSTEM DESIGN AND DEVICE DRIVER DEVELOPMENT

Course Code: BEC 802 **Credit Units: 03**

Course Objective:
The syllabus is divided into two parts, the first one deals with the basic embedded system and it's design and in second part deals with device driver development .The syllabus makes student perfect in assembly language programming, addressing modes etc apart from it input-output programming is discussed in detail.

Course Contents:

Module I:An introduction to embedded systems:
An Embedded system, processor in the system, other hardware units, software embedded into a system, exemplary embedded systems, embedded system – on – chip (SOC) and in VLSI circuit.

Module II: Processor and memory organization :
Structural Units in a Processor, Processor selection for an embedded system, memory devices, memory selection for an embedded systems, allocation of memory to program cache and memory management links, segments and blocks and memory map of a system, DMA, interfacing processors, memories and Input Output Devices.

Module III: Devices and buses for device networks:
I/O devices, timer and counting devices, serial communication using the "I2 C" CAN, profibus foundation field bus. and advanced I/O buses between the network multiple devices, host systems or computer parallel communication between the networked I/O multiple devices using the ISA, PCI, PCI-X and advanced buses.

Module IV: Device drivers and interrupts servicing mechanism :
Device drivers, parallel port and serial port device drivers in a system, device drivers for internal programmable timing devices, interrupt servicing mechanism.

Module V: Hardware:
software co-design in an embedded system, embedded system project management, embedded system design and co-design issues in system development process, design cycle in the development phase for an embedded system, use of target systems, use of software tools for development of an embedded system, use of scopes and logic analysis for system, hardware tests. Issues in embedded system design.

Examination Scheme:

Components	A	CT	S/V/Q	HA	EE
Weightage (%)	5	15	5	5	70

CT: Class Test, HA: Home Assignment, S/V/Q: Seminar/Viva/Quiz, EE: End Semester Examination; Att: Attendance

Text & References:

Text
- M.A. Mazidi and J. G. Mazidi, 2004 "The 8051 Microcontroller and Embedded Systems", PHI.
- Dr. Prasad, 2004, "Embedded Real Time System", Wiley Dreamtech.
- P.Raghavan , "Embedded linux system design and development", auerbach publication.

Reference
- Michael barr, "Programming embedded system" oreilly publication.
- Raj Kamal, 2004, "Embedded Systems", TMH.
- Embedded systems design: Real world design be Steve Heath; Butter worth Heinenann, Newton mass USA 2002

INSTRUMENTATION

Course Code: BEC 803 **Credit Units: 03**

Course Objective:

The basic objective of this course is to provide the students the core knowledge of industrial instrumentation so that they learn how to implement instrumentation techniques in industry.

Course Contents:

Module I: Introduction to Measurement & Instrumentation
Classification, Characteristics of measuring instruments: accuracy, precision, error, linearity, hysteresis, resolution & sensitivity, generalized instrumentation systems, primary sensing elements-definition & examples, transducers: definition & Classification; measurement of pressure- diaphragms, capsules, bourdon tubes, strain-gauge transducers, LVDT type, Temperature Measurement (RTD, Thermocouple, thermistor, optical pyrometer); Measurement of force:-load cell(column type, proving ring, shear type), Measurement of flow classification flow meters, head type flow meters-Venturi tube, flow nozzle, pitot tube

Module II: A. C. Instruments
A.C. Voltmeter using rectifier; True RMS responding Voltmeter; Electronics Multimeter; Digital Voltmeter; spectrum analyzer, harmonic distortion analyzer, CRO-introduction, construction of conventional CRO. Digital storage oscilloscope.

Module III: Telemetry
Telemetry-introduction & different types of telemetry system, data acquisitions-signal conditioning, single channel & multichannel data acquisition system.

Module IV: Miscellaneous Instruments
Computer controlled test systems-introduction, testing of audio amplifier, Testing of Radio Receiver; Instruments used in computer controlled instrumentation, IEEE 488 electrical interface, Fiber optic Instrumentation.

Examination Scheme:

Components	A	CT	S/V/Q	HA	EE
Weightage (%)	5	15	5	5	70

CT: Class Test, HA: Home Assignment, S/V/Q: Seminar/Viva/Quiz, EE: End Semester Examination; Att: Attendance

Text & References:

Text:
- A. K. Sawhney, 2005, "Measurement & Instrumentation" Dhanpat Rai Publications.
- Rangan, Sarma, Mani, "Instrumentation- devices & systems", TMH
- Helfrick, Cooper, "Modern Electronic Instrumentation & Measurement Techniques", PHI – 4th Reprint.

References:

- Johnson, "Process Control Instrumentation" PHI – 7th Edition

NANOSCIENCE AND NANOTECHNOLOGY

Course Code: BEC 804 **Credit Units: 03**

Course Objective:

The basic objective of this course to equipping the students with the basic concepts and principles revolving around nanotechnology.

Course Contents:

Module1: Background to Nanotechnology

Scientific revolution- Atomic structures-Molecular and atomic size-Bohr radius – Emergence of Nanotechnology – Challenges in Nanotechnology - Carbon age–New form of carbon (from Graphene sheet to CNT).

Module 2: Nucleation

Influence of nucleation rate on the size of the crystals- macroscopic to microscopic crystals and nanocrystals - large surface to volume ratio, top-down and bottom-up approaches-self assembly process-grain boundary volume in nanocrystals-defects in nanocrystals-surface effects on the properties.

Module 3: Types of Nanostructures

Definition of a Nano system - Types of Nanocrystals-One Dimensional (1D)-Two Dimensional (2D) -Three Dimensional (3D) nanostructure materials - Quantum dots - Quantum wire Core/Shell structures.

Module 4: Nanomaterials and properties

Carbon Nanotubes (CNT) - Metals (Au, Ag) - Metal oxides (TiO2, CeO2, ZnO) - Semiconductors (Si, Ge, CdS, ZnSe) - Ceramics and Composites - Dilute magnetic semiconductor- Biological system - DNA and RNA - Lipids - Size dependent properties - Mechanical, Physical and Chemical properties.

Module 4: Applications of Nanomaterials

Molecular electronics and nanoelectronics – Quantum electronic devices - CNT based transistor and Field Emission Display - Biological applications - Biochemical sensor - Membrane based water purification .

Examination Scheme:

Components	A	CT	S/V/Q	HA	EE
Weightage (%)	5	15	5	5	70

CT: Class Test, HA: Home Assignment, S/V/Q: Seminar/Viva/Quiz, EE: End Semester Examination; A: Atten

Text & References:

Text:

- M. Wilson, K. Kannangara, G Smith, M. Simmons, B. Raguse, Nanotechnology: Basic science and Emerging technologies, Overseas Press India Pvt Ltd, New Delhi, First Edition, 2005.
- . C.N.R.Rao, A.Muller, A.K.Cheetham (Eds), The chemistry of nanomaterials: Synthesis, properties and applications, Wiley VCH Verlag Gmbh&Co, Weinheim, 2004.
- Kenneth J. Klabunde (Eds), Nanoscale Materials Science, John Wiley & Sons, InC, 2001.

References:
- C.S.S.R.Kumar, J.Hormes, C.Leuschner, Nanofabrication towards biomedical applications, Wiley –VCH Verlag GmbH & Co, Weinheim, 2004.
- .W. Rainer, Nano Electronics and information Technology, Wiley, 2003.
- K.E.Drexler, Nano systems, Wiley, 1992.
- G.Cao, Naostructures and Nanomaterials: Synthesis, properties and applications, Imperical College Press, 2004.

ROBOTICS AND AUTOMATION

Course Code: BEC 805 **Credit Units: 03**

Course Objective:

To study the various parts of robots and fields of robotics. It also studies the various kinematics and inverse kinematics of robots. Futher to explore the Euler, Lagrangian formulation of Robot dynamics. To study the trajectory planning for robot and study the control of robots for some specific applications

Course Contents:

Module I: Introduction

Definition and origin of robotics ,different types of robotics ,various generations of robots ,degrees of freedom Asimov's laws of robotics , dynamic stabilization of robots.

Module II: Power sources and sensors

Hydraulic, pneumatic and electric drives – determination of HP of motor and gearing ratio – variable speed arrangements – path determination – micro machines in robotics – machine vision – ranging – laser – acoustic – magnetic, fiber optic and tactile sensors.

Module III: Manipulators, actuators and grippers

Construction of manipulators – manipulator dynamics and force control – electronic and pneumatic manipulator control circuits – end effectors – U various types of grippers – design considerations.

Module IV: Kinematics and path planning

Solution of inverse kinematics problem ,multiple solution jacobian work envelop , hill Climbing Techniques robot programming languages

Module V: Case studies

Mutiple robots, machine interface , robots in manufacturing and non- manufacturing applications ,robot cell design ,selection of robot.

Examination Scheme:

Components	A	CT	S/V/Q	HA	EE
Weightage (%)	5	15	5	5	70

CT: Class Test, HA: Home Assignment, S/V/Q: Seminar/Viva/Quiz, EE: End Semester Examination; Att: Attendance

Text & References:

Text

- Mikell P. Weiss G.M., Nagel R.N., Odraj N.G., "Industrial Robotics", Mc Graw-Hill Singapore, 1996.
- Ghosh, Control in Robotics and Automation: Sensor Based Integration, Allied Publishers, Chennai, 1998.

References:

- Deb. S.R.,"Robotics Technology and flexible Automation", John Wiley, USA 1992.
- Klafter R.D., Chimielewski T.A., Negin M., "Robotic Engineering – An integrated approach", Prentice Hall of India, New Delhi, 1994.
- Mc Kerrow P.J. "Introduction to Robotics", Addison Wesley, USA, 1991.
- Issac Asimov "Robot", Ballantine Books, New York, 1986.
- Barry Leatham – Jones, "Elements of industrial Robotics" PITMAN Publishing, 1987.
- Mikell P.Groover, Mitchell Weiss, Roger N.Nagel Nicholas G.Odrey, "Industrial Robotics Technology, Programming and Applications ", McGraw Hill Book Company 1986.
- Fu K.S. Gonzaleaz R.C. and Lee C.S.G., "Robotics Control Sensing, Vision and Intelligence" McGraw Hill International Editions, 1987.

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PROGRAMME STRUCTURE
Electronics & Communication Engineering

EMBEDDED SYSTEM DESIGN AND DEVICE DRIVER DEVELOPMENT LAB

Course Code: BEC 822 **Credit Units: 01**

List of Experiments

1. Write C language program to …
a) Read data from port P2 and P3. Add data and display result on port P0.Glow LED connected at port pinP1.1 if carry flag set after addition.
b) Read data from port P2 and P3. Multiply data and display result on port P0 and P1
c) Write program to read switch connected at port pin P1.0,toggle it and send to port pin P1.1
2. Write a program to generate square wave of 50% duty cycle having frequency 5 KHz at port pin P1.0 using timer 1 in mode 2. Modify program to generate pulse waveform of 70% duty cycle using timer on the same pin.
3. Interface LCD with the microcontroller. Display your name on the LCD..
4. WAP to interface the 4x4 keypad with microcontroller and display the respective digit on LCD.
5. WAP to interface the DC motor with 8051.
a) If sw=0, DC motor rotate clockwise b)If sw=1, DC motor rotate anticlockwise
6. Interface stepper motor with port P0 of the microcontroller. Write a program to rotate motor in clockwise and anticlockwise direction in half step and full step mode
7. Interface 8 bit DAC chip with 89C51 microcontroller. Write a program to generate sine wave using look up table.
8. Interface ADC0808 with 89C51 microcontroller. Write program to read analog voltage applied at the input of ADC. Display it on LCD.
9. Write a program to receive bytes of data serially and display it on port P0. Use 8 bit UART mode with baud rate 4800.
10. Write a program to transmit letter “E” continuously using serial port with 4800 baud rate. Modify program to transmit text “YES”. Use 8 bit UART mode with baud rate 19,200.
11. Interface seven segment displays with Port P2. Write program to display number 0 to 9 on the seven segment display at the interval of 1 second.
12. Generate external interrupt INT0 and INT1 by connecting push button switch. Glow LEDs connected at port 1 one by one when interrupt INT0 occurs. LEDs should flash when interrupt INT1 occurs

Examination Scheme:

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PROGRAMME STRUCTURE

Electronics & Communication Engineering

IA				EE	
A	**PR**	**LR**	**V**	**PR**	**V**
5	10	10	5	35	35

Note: IA –Internal Assessment, EE- External Exam, PR- Performance, LR – Lab Record, V – Viva.

PROJECT

Course Code: BEC 861 **Credit Units: 12**

Methodology:

Topics of project are to be based on the latest trends, verifying engineering concepts /principals and should involve elementary research work. The projects may involve design, fabrications, testing, computer modeling, and analysis of any engineering problem. On completion of the practical training the students are to present a report covering various aspects learnt by them and give a presentation on same.

Examination Scheme:

Literature study/ Fabrication/ Experimentation	40
Written Report	20
Viva	15
Presentation	25
Total	**100**