KALINGA UNIVERSITY
RAIPUR | INDIA

SCHEME OF EXAMINATION & SYLLABUS

For
Bachelor of Vocational Studies
(B. Voc.)
(Mobile Communication)

Kalinga University, Naya Raipur, Chhattisgarh

BACHELOR OF VOCATIONAL STUDIES (B. VOC.) (MOBILE COMMUNICATION)

Semester I							
Code No.	Paper	L	T/P	Credits	End Semester Exam	Internal Marks	Total Marks
BVMC101	Basics of Electrical Engineering	3	0	3	70	30	100
BVMC102	Analog Electronics	3	0	3	70	30	100
BVMC103	Digital Electronics	3	0	3	70	30	100
BVMC104	Communication Skills	2	1	3	70	30	100
	OPEN ELECTIVE-I (Select any one)	3	0	3	70	30	100
BVMC105A	Aptitude & Logical Reasoning						
BVMC105B	Mathematics Foundation for Electronics						
	GENERAL ELECTIVE-I (Select any one)	2	0	2	70	30	100
BVMC106A	Human Values and Professional Ethics						
BVMC106B	Personality Development & Behavioural Science						
	PRACTICAL/VIVA VOCE (Select any one Lab based on OPEN ELECTIVE-I)	0	2	2	30	20	50
BVMC107A(P)	Aptitude & Logical Reasoning Lab						
BVMC107B(P)	Mathematics Foundation for Electronics Lab						
	PRACTICAL/VIVA VOCE						
BVMC108P	Basics of Electrical Engineering Lab	0	3	3	30	20	50
BVMC109P	Analog Electronics Lab	0	3	3	30	20	50
BVMC110P	Digital Electronics Lab	0	3	3	30	20	50
BVMC111P	Vocational Workshop	0	2	2	30	20	50
	Total	**16**	**14**	**30**	**570**	**280**	**850**

NOTE:
There are five industrial trainings to be carried out by the student(s) in B.Voc course. Industrial Trainings I, III and V will be with weightage of two credits each. These trainings are to be carried out during winter vacations for the duration of two weeks. Industrial Trainings II and IV will be with weightage of four credits each. These trainings are to be carried out during summer vacations for the duration of four to six weeks. These training may be done from industry/Skill Knowledge Providers (SKPs) /Sector Skill Councils (SSCs) / Training Centers/Institutes. Student should submit training report during evaluation. Industrial Training done at the end of the semester will be evaluated in the subsequent semesters.

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Semester II							
Code No.	Paper	L	T/P	Credits	End Semester Exam	Internal Marks	Total Marks
BVMC201	Programming Skills using C	3	0	3	70	30	100
BVMC202	Linear Integrated Circuits.	3	0	3	70	30	100
BVMC203	Analog and Digital Communication	3	0	3	70	30	100
BVMC204	Environmental Science	2	0	2	70	30	100
	OPEN ELECTIVE-II (Select any one)	3	0	3	70	30	100
BVMC205A	Electronics Measurements and Instrumentation						
BVMC205B	Industrial Electronics						
	PRACTICAL/VIVA VOCE (Select any one Lab based on OPEN ELECTIVE-II)	0	3	3	30	20	50
BVMC206A(P)	Electronics Measurements and Instrumentation Lab						
BVMC206B(P)	Industrial Electronics Lab						
	PRACTICAL/VIVA VOCE						
BVMC207P	Programming Skills using C Lab	0	3	3	30	20	50
BVMC208P	Linear Integrated Circuits Lab	0	3	3	30	20	50
	Analog and Digital Communication Lab	0	3	3	30	20	50
BVMC210P	Environmental Science Lab / Field work	0	3	3	30	20	50
BVMC211P	Project-I	0	6	3	70	30	100
BVMC212P	Industrial Training-I	0	0	2	30	20	50
	Total	**14**	**21**	**34**	**600**	**300**	**900**

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Semester III							
Code No.	Paper	L	T/P	Credits	End Semester Exam	Internal Marks	Total Marks
BVMC301	Telecom Infrastructure and Grounding	3	0	3	70	30	100
BVMC302	Electromagnetics &Transmission Lines	3	0	3	70	30	100
BVMC303	Programming in Java	3	0	3	70	30	100
BVMC304	Database Management Systems	3	0	3	70	30	100
BVMC305	Data Communication & Networks	3	0	3	70	30	100
	OPEN ELECTIVE-III (Select any one)	3	0	3	70	30	100
BVMC306A	Organizational Behaviour						
BVMC306B	Operations Research						
BVMC306C	Industrial Management						
	PRACTICAL/VIVA VOCE						
BVMC307P	Telecom Infrastructure and grounding Lab	0	3	3	30	20	50
BVMC308P	Programming in Java Lab	0	3	3	30	20	50
BVMC309P	Database Management Systems Lab	0	3	3	30	20	50
BVMC310P	Data Communication & Networks Lab	0	3	3	30	20	50
BVMC311P	Industrial Training-II	0	2	4	30	20	50
	Total	**18**	**14**	**34**	**570**	**280**	**850**

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and V will be with weightage of two credits each. These trainings are to be carried out during winter vacations for the
duration of two weeks. Industrial Trainings II and IV will be with weightage of four credits each. These trainings are to be
carried out during summer vacations for the duration of four to six weeks. These training may be done from industry/Skill
Knowledge Providers (SKPs) /Sector Skill Councils (SSCs) / Training Centers/Institutes. Student should submit training report
during evaluation. Industrial Training done at the end of the semester will be evaluated in the subsequent semesters.

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Semester IV

Code No.	Paper	L	T/P	Credits	End Semester Exam	Internal Marks	Total Marks
BVMC401	Microprocessors and Microcontrollers	3	0	3	70	30	100
BVMC402	Mobile Computing	3	0	3	70	30	100
BVMC403	Antenna Theory and Wave Propagation	3	0	3	70	30	100
	CORE ELECTIVE-I (Select any one)	3	0	3	70	30	100
BVMC404A	Operating System Concepts						
BVMC404B	Introduction to Open Source Software						
	OPEN ELECTIVE-IV (Select any one)	3	0	3	70	30	100
BVMC405A	Global Warming & Climate Change						
BVMC405B	Entrepreneurship Development and Planning						
BVMC405C	Business Informatics						
	PRACTICAL/VIVA VOCE (Select any one Lab based on theory)	0	3	3	30	20	50
BVMC406A(P)	Operating System Concepts Lab						
BVMC406B(P)	Introduction to Open Source Software Lab						
	PRACTICAL/VIVA VOCE						
BVMC407P	Microprocessors and Microcontrollers Lab	0	3	3	30	20	50
BVMC408P	Mobile Computing Lab	0	4	4	30	20	50
BVMC409P	Industrial Training-III	0	0	2	30	20	50
BVMC410P	Project-II	0	6	3	70	30	100
	Total	**15**	**16**	**30**	**540**	**260**	**800**

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and V will be with weightage of two credits each. These trainings are to be carried out during winter vacations for the
duration of two weeks. Industrial Trainings II and IV will be with weightage of four credits each. These trainings are to be
carried out during summer vacations for the duration of four to six weeks. These training may be done from industry/Skill
Knowledge Providers (SKPs) /Sector Skill Councils (SSCs) / Training Centers/Institutes. Student should submit training report
during evaluation. Industrial Training done at the end of the semester will be evaluated in the subsequent semesters.

NOTE FOR PROJECT:
The student will submit a synopsis at the beginning of the semester for approval from the departmental
Committee in a specified format, thereafter he/she will have to present the progress of the work through seminars and
progress reports.

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Semester V							
Code No.	**Paper**	**L**	**T/P**	**Credits**	**End Semester Exam**	**Internal Marks**	**Total Marks**
BVMC501	Technical English	3	0	3	70	30	100
BVMC502	Wireless Communication	3	0	3	70	30	100
	CORE ELECTIVE-II (Select any one)	3	0	3	70	30	100
BVMC503A	Signals and Systems						
BVMC503B	Mobile Application Development						
	CORE ELECTIVE-III (Select any one)	3	0	3	70	30	100
BVMC504A	Web Engineering						
BVMC504B	Web Application and Development						
	PRACTICAL/VIVA VOCE (Select any one Lab based on CORE ELECTIVE-II)	0	2	2	30	20	50
BVMC505A(P)	Signals and Systems Lab						
BVMC505B(P)	Mobile Application Development Lab						
	PRACTICAL/VIVA VOCE (Select any one Lab based on CORE ELECTIVE-III)	0	2	2	30	20	50
BVMC506A(P)	Web Engineering Lab						
BVMC506B(P)	Web Application and Development Lab						
	PRACTICAL/VIVA VOCE						
BVMC507P	Language Lab (Common to all disciplines)	0	3	3	30	20	50
BVMC508P	Wireless Communication Lab	0	2	3	30	20	50
BVMC509P	Minor Project	0	8	4	70	30	100
BVMC510P	Industrial Training-IV	0	2	4	70	30	100
	Total	**12**	**19**	**30**	**540**	**260**	**800**

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	Semester VI						
Code No.	**Paper**	**L**	**T/P**	**Credits**	**End Semester Exam**	**Internal Marks**	**Total Marks**
BVMC601	Embedded Systems	3	0	3	70	30	100
BVMC602	Network Security	3	0	3	70	30	100
	CORE ELECTIVE-IV (Select any one)	3	0	3	70	30	100
BVMC603A	Ad hoc and Sensor Networks						
BVMC603B	Digital Signal Processing						
	CORE ELECTIVE-V (Select any one)	3	0	3	70	30	100
BVMC604A	Satellite Communication						
BVMC604B	Internet of Things						
BVMC604C	**Telecom Service Management**						
	PRACTICAL/VIVA VOCE (Select any one Lab based on CORE ELECTIVE-IV)	0	2	2	30	20	50
BVMC605A(P)	Ad hoc and Sensor Networks Lab						
VMC605B(P)	Digital Signal Processing Lab						
	PRACTICAL/VIVA VOCE						
BVMC606P	Embedded Systems Lab	0	2	2	30	20	50
BVMC607P	Network Security Lab	0	2	2	30	20	50
BVMC608P	Industrial Training-V	0	0	2	70	30	100
BVMC609P	Major Project#*	0	24	12	150	50	200
	Total	**12**	**32**	**32**	**590**	**260**	**850**

NOTE:

There are five industrial trainings to be carried out by the student(s) in B.Voc course. Industrial Trainings I, III and V will be with weightage of two credits each. These trainings are to be carried out during winter vacations for the duration of two weeks. Industrial Trainings II and IV will be with weightage of four credits each. These trainings are to be carried out during summer vacations for the duration of four to six weeks. These training may be done from industry/Skill Knowledge Providers (SKPs) /Sector Skill Councils (SSCs) / Training Centers/Institutes. Student should submit training report during evaluation. Industrial Training done at the end of the semester will be evaluated in the subsequent semesters.

#*The student will submit a synopsis at the beginning of the semester for approval from the departmental committee in a specified format, thereafter he/she will have to present the progress of the work through seminars and progress reports. Seminar related to major project should be delivered one month after staring of Semester. The progress will be monitored through seminars and progress reports. ***The students may be allowed to do Industrial Major Project on-site during 5 days in a week and class work should be completed in 2 working days in the respective institution. If in case, the classes are held during Saturday /Sunday then faculty should be given off in lieu of Saturday/Sunday.***

SEMESTER I
BASICS OF ELECTRICAL ENGINEERING (BVMC101)

OBJECTIVES AND PRE-REQUISITES:

The students should have studied Calculus, Matrices, Complex numbers and Electrical concepts from physics. The course aims to provide exposure to basic electrical engineering concepts to non-major students.

Learning Outcomes: A student who successfully fulfills the course requirements will have demonstrated:

1. An understanding of charge, current, voltage, power, energy, electrical safety, resistors (R), and the fundamental principles of Ohm's law, KVL and KCL, behaviour of inductances (L) and capacitances (C).

2. An ability to write the differential equations for a given RLC network and solve them analytically for the transient and steady state responses to a step input.

3. An ability to qualitatively and quantitatively predict and compute the steady state AC responses of basic circuits using the phasor method.

4. A proficiency in calculating parameters of a two port network.

UNIT-I Basic Circuit Concepts: Voltage and Current Sources, Resistors: Fixed and Variable resistors, Construction and Characteristics, Color coding of resistors, resistors in series and parallel.

Inductors: Fixed and Variable inductors, Self and mutual inductance, Faraday's law and Lenz's law of electromagnetic induction, Energy stored in an inductor, Inductance in series and parallel, Testing of resistance and inductance using multimeter.

Capacitors: Principles of capacitance, Parallel plate capacitor, Permittivity, Definition of Dielectric Constant, Dielectric strength, Energy stored in a capacitor, Air, Paper, Mica, Teflon, Ceramic, Plastic and Electrolytic capacitor, Construction and application, capacitors in series and parallel, factors governing the value of capacitors, testing of capacitors using multimeter.

UNIT-II Circuit Analysis: Kirchhoff's Current Law (KCL), Kirchhoff's Voltage Law (KVL), Node Analysis, Mesh Analysis.

DC Transient Analysis: Initially Charged RC Circuit, RL Circuit with Initial Current, Time Constant, RL and RC Circuits With Sources, DC Response of Series RLC Circuits.

UNIT-III AC Circuit Analysis: Sinusoidal Voltage and Current, Definition of Instantaneous, Peak, Peak to Peak, Root Mean Square and Average Values. Voltage-Current relationship in Resistor, Inductor and Capacitor, Phasor, Complex Impedance, Power in AC Circuits: Instantaneous Power, Average Power, Reactive Power, Power Factor. Sinusoidal Circuit Analysis for RL, RC and RLC Circuits. Mesh Analysis, Node Analysis and Network Theorems for AC Circuits. Passive Filters: Low Pass, High Pass, Band Pass and Band Stop.

UNIT – IV Network Theorems: Principal of Duality, Superposition Theorem, Thevenin's Theorem, Norton's Theorem, Reciprocity Theorem, and Maximum Power Transfer Theorem.
Two Port Networks: Impedance (Z) Parameters, Admittance (Y) Parameters, Transmission (ABCD) Parameters.

Text Book(s):

1. Hambley, A. R., Electrical Engineering, Principles and Applications, 5th Edition, Prentice Hall, (2011).

2. B. L. Theraja, Electrical Technology: Basic Electrical Engineering (Volume-1), S. Chand (2008).

References Book(s):

1. S. A. Nasar, Electric Circuits, Schaum's outline series, Tata McGraw Hill (2004).
2. Electrical Circuits, M. Nahvi and J. Edminister, Schaum's Outline Series, Tata McGraw-Hill.(2005).
3. W. H. Hayt, J. E. Kemmerly, S. M. Durbin, Engineering Circuit Analysis, Tata McGraw Hill(2005).
4. Robert L. Boylestad, Essentials of Circuit Analysis, Pearson Education (2004)
5. M. E. Van Valkenburg, Network Analysis, 3rd Edition, PHI Learning (2014).

ANALOG ELECTRONICS (BVMC102)

OBJECTIVES AND PRE-REQUISITES:

The objective of teaching this subject is to impart in depth understanding of the concepts of biasing in active circuits and employing simple models to represent nonlinear and active elements in circuits. It also includes the operation of the circuits at high frequencies and effects of feedback. The analysis of power amplifier & tuned amplifiers is also dealt with. The student is expected to have a basic understanding of active and passive circuit elements.

Learning Outcomes: The student is expected to develop a basic knowledge of basic semiconductor devices and their operation in different configurations.

UNIT – I
Review of diode and BJT: Review of diode and BJT, CB, CE, CC configurations, comparisons of different configurations, BJT amplifier (CE), dc and ac load line analysis.
Bias stabilization: Need for stabilization, fixed Bias, voltage divider bias & ß Stabilization factors, thermal stability.

UNIT – II
Small signal amplifiers: Quantitative study of the frequency response of a CE amplifier, coupling schemes, RC coupled amplifiers, Emitter follower.
Multistage Amplifiers: Cascade and Cascode amplifiers, Effect on gain and bandwidth for Cascaded CE amplifiers (RC coupled).
Feedback Amplifiers: Concept of feedback, negative and positive feedback, advantages and disadvantages of negative feedback, voltage (series and shunt), current (series and shunt) feedback amplifiers, gain, input and output impedances.

UNIT – III
Oscillators: Barkhausen criteria for oscillations, Study of phase shift oscillator, Colpitts oscillator and Hartley oscillator.
MOSFET Circuits: Review of JFET, Depletion and Enhancement MOSFET, Biasing of MOSFETs, Small Signal Parameters, Common Source amplifier circuit analysis, CMOS circuits.

UNIT – IV
Power Amplifiers: Power dissipations in transistors, Amplifiers Classification, (Class-A, Class-B, Class-C, Class-AB) Efficiency analysis, Push-pull amplifiers.
Single tuned amplifiers: Circuit diagram, Working and Frequency Response, Limitations of single tuned amplifier, Applications of tuned amplifiers in communication circuits.

Text Book(s):

1. Boylestad & Nashelsky, "Electronic Devices & Circuit Theory" PEARSON PUBLICATION
2. Salivahanan, Suresh Kumar, Vallavaraj, "Electronic devices and circuits" TMH, 1999
3. J. Millman and Halkias, "Integrated Electronics, Analog & Digital Circuits & Systems" TMH–2000.

Reference Book(s):

1. N N Bhargava, "Basic Electronics & Linear Circuits", 2nd Ed., TMH.
2. Sedra & Smith, "Micro Electronic Circuits", Oxford University Press, 2000
3. David A Bell, "Electronic Devices and Circuits", Oxford University Press, 2000.
4. Albert Malvino, David J. Bates, "Problems and Solutions in Basic Electronics", TMH.

DIGITAL ELECTRONICS (BVMC 103)

OBJECTIVES AND PRE-REQUISITES:

The objective of the paper is to facilitate the student with the knowledge of Logic Systems and Circuits, thereby enabling the student to obtain the platform for studying Digital Systems and Computer Architecture. Knowledge of basic mathematics is sufficient for this course.

Learning Outcomes: The student is expected to develop an understanding of simple digital systems and develop the logic behind the organization of various computer components.

UNIT- I

Number Systems and Codes:- Decimal, Binary, Hexadecimal and Octal number systems, base conversions, Binary, octal and hexadecimal arithmetic (addition, subtraction by complement methods, multiplication), representation of signed and unsigned numbers, Codes- BCD, Gray Code, Excess-3 Code, ASCII, EBCDIC, Conversion between various Codes.

Logic Gates and Boolean algebra: Truth Tables of OR, AND, NOT, XOR, XNOR, Universal (NOR and NAND) Gates, Basic postulates and fundamental theorems of Boolean algebra.

UNIT- II

Combinational Logic Analysis and Design: Standard representation of logic functions (SOP and POS), Minimization Techniques (K-Map, Boolean Algebra & Quine Mc-Cluskey), Encoder and Decoder, Multiplexers and Demultiplexers, Implementing logic functions with multiplexer & Decoder, binary Adder, binary subtractor, 4 bit adder/ subtractor using 2's complement.

Sequential Logic Circuits:- Latches and Flip Flops- SR, D, T and J.K F.F (Master Slave-JK and Edge Triggered JK Flip Flops), Asynchronous Inputs. Clocked and edge triggered Flip flops.

UNIT- III

Synchronous Sequential Circuits:- State Tables, State Equations and State Diagrams, State Reduction and State Assignment, Design of Clocked Sequential Circuits using State Equations.

Counters and Shift Registers:- Design of Synchronous and Asynchronous Counters:- Binary, BCD/Decade and Up/Down Counters , Ring Counter and Johnson Counter. Shift Registers, Types of Shift Registers (SIPO, PISO, SISO, PIPO), Universal Shift Register.

UNIT- IV

Programmable Logic Devices: Brief introduction to RAM and ROM; Basic concepts- ROM, PLA, PAL, FPGA.

Integrated circuits:- TTL and CMOS logic families and their characteristics. Fan-in, Fan out, Noise Margin, Power Dissipation, Propagation delay, Voltage and current levels, Figure of merit and Speed power product.

Text Book(s):

1. Thomas L. Flyod, Digital Fundamentals, Pearson Education Asia (1994)
2. Morris Mano, Digital Logic and Computer Design", Pearson
3. A Anand Kumar, "Fundamentals of Digital Logic Circuits", PHI

Reference Book(s):

1. R.P. Jain, "Modern Digital Electronics", TMH, 2/e.
2. Zyi Kohavi, "Switching & Finite Automata Theory", TMH, 2 Edition
3. Taub ,Helbert and Schilling, "Digital Integrated Electronics", TMH
4. W. H. Gothmann, Digital Electronics: An Introduction to Theory And Practice, PHI (2000)

OPEN ELECTIVE-I (SELECT ANY ONE)

APTITUDE & LOGICAL REASONING (BVMC105A)

OBJECTIVES AND PRE-REQUISITES:

At the end of the course the students will be able to (a) Interpret different data, (b) Establish relationship between numbers & (c) Solve different logical. To impart students with logical skills to solve problems easily.

UNIT-I

Data sufficiency, Measurement, Time and distance, Arithmetic, Relationship between numbers.

UNIT-II

Basic mathematical relations and formula, Computation, Data interpretation.

UNIT-III

Differences, Discrimination, Decision-making, Judgement, Problem-solving, Analogies, Analysis.

UNIT-IV

Arithmetic reasoning, Relationship concept, Arithmetic number series, Similarities, Verbal and figure classification, Space visualization, Observation.

Text Book(s):

1. Arun Sharma, "How to prepare for Logical Reasoning for the CAT".
2. A.K. Gupta, "Logical and Analytical Reasoning".

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MATHEMATICS FOUNDATION FOR ELECTRONICS (BVMC 105B)

OBJECTIVE:

The objective of the paper is to facilitate the student with the basics of Applied Mathematics that are required for an electronics engineering student.

UNIT-I

Matrices I: Orthogonal matrix, Hermitian matrix, Skew-Hermitian matrix and Unitary matrix. Inverse of matrix by Gauss-Jordan Method (without proof). Rank of matrix by echelon and Normal (canonical) form. Linear dependence and linear independence of vectors. Consistency and inconsistency of linear system of homogeneous and non-homogeneous equations.

UNIT-II

Matrices II: Eigen values and Eigen vectors. Properties of Eigen values (without proof). Cayley-Hamilton theorem (without proof). Diagonalization of matrix. Quadratic form, reduction of quadratic form to canonical form.

UNIT-III

Sequences and series: Sequences, Limit of a sequence, Convergence, Divergence and Oscillation of a sequence, Infinite series, Necessary condition for Convergence, Cauchy's Integral Test, D'Alembert's Ratio Test, Cauchy's nth Root Test, Alternating Series, Leibnitz's Theorem, Absolute Convergence and Conditional Convergence, Power Series.

UNIT-IV

Ordinary differential equations: First order linear differential equations, Leibnitz and Bernaulli's equation. Exact differential equations, Equations reducible to exact differential equations. Linear differential equation of higher order with constant coefficients, Homogeneous and non-homogeneous differential equations reducible to linear differential equations with constant coefficients.

Text Book (s):

1. B. S. Grewal, "Higher Engineering Mathematics", Khanna Publications.
2. R. K. Jain and S.R. K. Iyengar, "Advanced Engineering Mathematics", Narosa Publications.

Reference Book(s):

1. E. Kresyzig, "Advance Engineering Mathematics", Wiley publications
2. G. Hadley, "Linear Algebra", Narosa Publication
3. N.M. Kapoor, "A Text Book(s) of Differential Equations", Pitambar Publication.
4. Wylie R, "Advance Engineering Mathematics", Tata McGraw-Hill
5. Schaum's Outline on Linear Algebra, Tata McGraw-Hill
6. Polking and Arnold, "Ordinary Differential Equation using MATLAB", Pearson.

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GENERAL ELECTIVE-I
(SELECT ANY ONE)
HUMAN VALUES AND PROFESSIONAL ETHICS
(BVMC106A)

OBJECTIVE:

This introductory course input is intended

a   To help the students appreciate the essential complementarity between 'VALUES' and 'SKILLS' to ensure sustained happiness and prosperity which are the core aspirations of all human beings.

b   To facilitate the development of a holistic perspective among students towards life, profession and happiness, based on the correct understanding of the Human reality and the rest of the Existence. Such a Holistic perspective forms the basis of value-based living in a natural way.

c   To highlight plausible implications of such a Holistic understanding in terms of ethical human conduct, trustful and mutually satisfying human behaviour and mutually enriching interaction with Nature.

UNIT-1: Introduction to Value Education

1. Understanding the need, basic guidelines, content and process for value education.

2. Basic Human Aspirations: Prosperity and happiness.

3. Methods to fulfill the human aspirations – understanding and living in harmony at various levels.

4. Practice Session – 1.

UNIT-2: Harmony in the Human Being

1. Co-existence of the sentient "I" and the material body–understanding their needs–Happiness &

2. Conveniences.

3. Understanding the Harmony of "I" with the body–Correct appraisal of physical needs and the meaning of prosperity.

4. Programme to ensure harmony of "I" and Body-Mental and Physical health and happiness.

5. Harmony in family and society: Understanding Human-human relationship in terms of mutual trust and respect.

6. Understanding society and nation as extensions of family and society respectively.

7. Practice Session – 02.

UNIT-3: Basics of Professional Ethics

1. Ethical Human Conduct – based on acceptance of basic human values.

2. Humanistic Constitution and universal human order – skills, sincerity and fidelity.

3. To identify the scope and characteristics of people – friendly and eco-friendly production system, Technologies and management systems.

4. Practice Session – 03.

UNIT-4: Professional Ethics in practice

1. Profession and Professionalism – Professional Accountability, Roles of a professional, Ethics and image
2. of profession.
3. Engineering Profession and Ethics - Technology and society, Ethical obligations of Engineering professionals, Roles of Engineers in industry, society, nation and the world.
4. Professional Responsibilities – Collegiality, Loyalty, Confidentiality, Conflict of Interest, Whistle Blowing
5. Practice Session – 04

Text Book(s):

1. Professional Ethics, R. Subramanian, Oxford University Press.
2. Professional Ethics & Human Values: S.B. Srivasthva, SciTech Publications (India) Pvt. Ltd. New Delhi.
3. Professional Ethics & Human Values: Prof. D. R. Kiran, TATA Mc Graw Hill Education.

References:

1. Success Secrets for Engineering Students: Prof. K.V. SubbaRaju, Ph.D., Published by SMART student.
2. Ethics in Engineering Mike W. Martin, Department of Philosophy, Chapman University and Roland Schinzinger, School of Engineering, University of California, Irvine.
3. Human Values: A. N. Tripathy (2003, New Age International Publishers).
4. Value Education website, http.//www.universalhumanvalues.info[16].
5. Fundamentals of Ethics, Edmond G. Seebauer & Robert L. Barry, Oxford University Press. [R6] Human Values and Professional Ethics: R. R. Gaur, R. Sangal and G. P. Bagaria, Eecel Book (s) (2010, New Delhi). Also, the Teachers" Manual by the same author.

PERSONALITY DEVELOPMENT & BEHAVIOURAL SCIENCE (BVMC 106B)

OBJECTIVES AND PRE-REQUISITES:

Students should have studied subjects such as General languages, social studies and Moral education at school level. The objective of this subject is to prepare the students to become a good citizen and a professional useful to the society.

Learning Outcomes: The knowledge of this subject will give the student a value system which will help him in taking decisions in professional and social life for the benefit of society at large.

UNIT-I

Definition and Basics of Personality, Understanding Traits and Types of Personality, Analyzing strength and weakness (SW), Body Language.

UNIT-II

Business Etiquettes and Public Speaking: Business Manners. Body Language Gestures, Email and Net Etiquettes, Etiquette of the Written Word, Etiquettes on the Telephone, Handling Business Meetings; Introducing Characteristic, Model Speeches, Role Play on Selected Topics with Case Analysis and Real Life Experiences.

UNIT-III

How to Make a Presentation, the Various Presentation Tools, along with Guidelines of Effective Presentation, Boredom Factors in Presentation and How to Overcome them, Interactive Presentation & Presentation as Part of a Job Interview, Art of Effective Listening.

Resume Writing Skills, Guidelines for a Good Resume, How to Face an Interview Board, Proper Body Posture, Importance of Gestures and Steps to Succeed in Interviews. Practice Mock Interview in Classrooms with Presentations on Self; Self Introduction – Highlighting Positive and Negative Traits and Dealing with People with Face to Face.

UNIT-IV

Coping Management, Working on Attitudes: Aggressive, Assertive and Submissive Coping with Emotions, Coping with Stress.

Text Book(s):

McGraw, S. J., (2008), "Basic Managerial Skills for All, Eighth Edition", Prentice Hall of India.

The Results-Driven Manager (2005). Business Etiquette for the New Workplace: The Results-Driven Manager Series (Harvard Results Driven Manager)

Reference Book(s):

1. Pease, A. & Pease, B. (2006)., "The Definitive Book(s) of Body Language", Bantam Book(s).

2. Scannell, E. & Rickenbacher,C. (2010)., "The Big Book(s) of People Skills Games: Quick, Effective Activities for Making Great Impressions, Boosting Problem-Solving Skills and Improving Customer Service", Mcgraw Hill Education.

PRACTICAL/VIVA VOCE (SELECT ANY ONE LAB BASED ON OPEN ELECTIVE-I)

APTITUDE & LOGICAL REASONING LAB (BVMC107A(P))

LIST OF EXPERIMENTS:

Subject teacher has to proforma at least eight experiments based on the topic mentioned in the theory paper by using software packages.

KALINGA UNIVERSITY
RAIPUR | INDIA

MATHEMATICS FOUNDATION FOR ELECTRONICS LAB (BVMC107B(P))

LIST OF EXPERIMENTS:

Subject teacher has to proforma at least eight experiments based on the topic mentioned in the theory paper by using software packages.

PRACTICAL/VIVA VOCE

BASICS OF ELECTRICAL ENGINEERING LAB (BVMC108P)

LIST OF EXPERIMENTS:

1. a) Color coding of resistances

   b) Resistance in series, parallel and series – Parallel.
2. Capacitors & Inductors in series & Parallel.
3. Study of Multimeter – Checking of components.
4. Voltage sources in series, parallel and series – Parallel
5. Voltage and Current dividers
6. Measurement of Amplitude, Frequency & Phase difference using CRO.
7. Verification of Kirchoff's Law.
8. Verification of Norton's theorem.
9. Verification of Thevenin's Theorem.
10. Verification of Superposition Theorem.
11. Verification of the Maximum Power Transfer Theorem.
12. Designing of a Low Pass RC Filter and study of its Frequency Response.
13. Designing of a High Pass RC Filter and study of its Frequency Response.

KALINGA UNIVERSITY

ANALOG ELECTRONICS LAB (BVMC109P)

LIST OF EXPERIMENTS:

1. To plot VI characteristics of PN Junction diode in forward bias and Zener diode in reverse bias region.
2. Study of Zener diode as a voltage regulator.
3. To study the working of a half wave and a full wave centre tapped rectifier.
4. To study full wave Bridge rectifier with different filters and calculate ripple factor.
5. Input and output characteristics and calculation of parameters of a transistor in common emitter configuration.
6. Measurement of operating point (Ic and Vce) for potential divider biasing circuit.
7. To Plot the VI Characteristics of JFET.
8. **Two Stage RC Coupled Amplifier:**
   - To measure the overall gain of two stages at 1 KHz and compare it with gain of first stage, also to observe the loading effect of second stage on the first stage.
   - To plot the frequency response curve of two stage amplifier.
9. To study Emitter follower circuit & measurement of voltage gain and plotting of frequency response Curve.
10. Feedback in Amplifier: Single stage amplifier with and without bypass capacitor, measurement of voltage gain and plotting the frequency response in both cases.
11. To study push pull amplifier.
12. To study the characteristics of single tuned amplifier.
13. Study of the Colpitt's Oscillator.
14. Study of the Hartley's Oscillator.
15. Study of the Phase Shift Oscillator.

DIGITAL ELECTRONICS LAB (BVMC110P)

LIST OF EXPERIMENTS:

1. To verify and design AND, OR, NOT and XOR gates using NAND gates.
2. To convert a Boolean expression into logic gate circuit and assemble it using logic gate IC's.
3. Design a Half and Full Adder using logic gates.
4. Design a Half and Full Adder using Multiplexer.
5. Design a Half and Full Subtractor using Logic Gates.
6. Design a Half and Full Subtractor using Decoder.

7. Realize a BCD adder

8. Realize a Serial Adder

9. Realize Master-Save J K Flip-Flop, using NAND/NOR gates

10. Realize Universal Shift Register

11. Design a synchronous counter using D/T/JK Flip-Flop.

12. Design a 4:1 Multiplexer using gates.

13. Design a 1:8 De-Multiplexer using gates.

14. Realize Carry Look ahead Adder / Priority Encoder

15. Simulation of PAL and PLA

DIGITAL ELECTRONICS LAB (BVMC111P)

LIST OF EXPERIMENTS:

1. **MS Word/ LibreOffice - Writer**

   a. Introduction to MS word and creating a document.

   b. Exercise on font and font size modification with stress on working with bold, italics, underlining, subscripts and superscripts

   c. Using page setup, header, footer, left alignment, right alignment, centre alignment, justified alignment, bullets and numbering

   d. Creating a table and modifying a table exercise

   e. Creating a text box and editing a text box exercise

   f. Inserting an image and editing an image exercise

   g. Working with symbols and equations exercise

   h. Introduction to usage of themes, outlines, effects, quick styles and templates.

2. **MS Excel/ LibreOffice - Calc**

   a. Introduction to MS Excel and creating a spreadsheet

   b. Modifying row and column sizes and adjusting cell size as per contents

   c. Using sum, average, max and min operations on some arbitrary data.

   d. Creating formulas with multiple rows and columns

   e. Creating charts – bar, line and pie

   f. Interfacing MS Excel and MS Word

   g. Introduction to usage of themes, outlines, effects, quick styles and templates.

3. **MS Powerpoint/ LibreOffice - Impress**

   a. Introduction to MS Popwerpoint and creating a presentation

b. Choosing a template, developing a title page and using title box and text boxes

c. Inserting images into the presentation

d. Working with animations on your presentation

e. Using timing tools on your presentation

f. Inserting MS Excel data into presentation

g. Introduction to usage of themes, outlines, effects, quick styles and templates.

4. MS Publisher/ Scribus

a. Introduction to MS Publisher and creating a publication

b. Creating a business card

c. Creating a newsletter

d. Creating a postcard

e. Creating a brochure

f. Creating a flyer

g. Importing MS Word document.

5. Adobe Photoshop/ GIMP

a. Introduction to Adobe Photoshop

b. Placing one image on top of another image

c. Inserting one image into defined frames on another image

d. Using Lasso tools and merging images

e. Using transform and opacity tools

f. Using invert selection and magic wand tools.

6. Adobe Flash/Synfig/FlashDevelop

a. Introduction to Adobe flash workspace

b. Understanding the flash timeline and types of frames

c. Creating a frame by frame animation

d. Creating an animation using tweening

e. Motion tweening

f. Shape tweening.

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SEMESTER II
PROGRAMMING SKILLS USING C
(BVMC201)

OBJECTIVE:

The objective of the paper is to make the students familiar with the basics of programming aspects, using C as the primary language. This course focuses on the programming constructs which are used in other languages as well. This is the introductory course on programming. So it does not require any perquisite.

UNIT-I

Concept of algorithms, Flow Chart, Programming using C: C character set, Tokens, identifiers, Variables, Constants, data type in C, simple I/O Function calls from library, arithmetic, relational and logical operations, Conditional Structure: if, else, switch, break, continue and goto.

UNIT-II

Concept of loops: for, while and do-while and nested loops.
Arrays: One and Two dimensional .Initialization and some basic operation on 1-D and 2-D array, Strings as array of character. Concept of Pointer, array and pointer relationship, pointer to array, array of pointers, pointer to functions.

UNIT-III

Functions: Concept of functions, Parameter passing techniques - call by value and call by reference, library functions.
Structure: Initialization of structure and their application, union.

UNIT-IV

Files: Concept of files, Binary files, Text files, File Handling in C Using File Pointers, fopen( ), fclose( ), Input and Output using file pointers, Character Input and Output with Files.

String: String manipulation Functions and their application.

Text Book(s):

1. Yashwant Kanetkar, "Test your C Skills", BPB Publications

2. Programming in ANSI C, E. Balagurusamy; Mc Graw Hill, 6th Edition.

Reference Book(s):

1. Kernighan & Ritchie, "C Programming Language", The (Ansi C version), PHI, 2nd Edition

2. K.R Venugopal, "Mastering C", TMH [R3] R.S. Salaria "Application Programming in C", Khanna Publishers, 4th Edition

LINEAR INTEGRATED CIRCUITS
(BVMC202)

OBJECTIVE:

The objective of teaching this subject is to give students in depth knowledge of design and analysis of analog IC (OP-AMP, OTA), The internal details of OP-AMP and measurement of its parameters is elaborated. The linear and nonlinear applications, useful for practical circuits, are detailed. Some important and widely used ICs such as 555 timer IC, PLL & VCO, Voltage Regulator IC etc., are also included. The student will need thee knowledge of basic analog semiconductor devices.

Pre-requisites: An ability to apply knowledge of mathematics functions. Basic transistor amplifier, understand and implement the working of basic digital circuits.

Learning Outcome: The student is expected to have an understanding of various types of integrated circuits and their applications in making different kinds of circuits. Design and construct waveform generation circuits.

UNIT-I

Introduction to Op-Amp: Differential amplifier using BJT, Block diagram of op-amp, pin diagram of 741 IC, characteristics of ideal Op-Amp, equivalent circuit of Op-Amp, Op-Amp ac and dc parameters. Building blocks of Analog ICs: Differential amplifier using single and two op-amp, virtual ground, circuit for improving CMRR.

UNIT-II

Linear & Non Linear Wave shaping: Inverting and non-inverting amplifiers, voltage follower, difference amp, adders, Voltage to current with floating & grounded load, current to voltage converter, practical integrator & differentiator, Clipping & Clamping circuits, Comparators, log/antilog circuits using Op-Amps, precision rectifiers (half & full wave), peak detector, Schmitt trigger circuit.

UNIT-III

Waveform generators using Op-Amp: Square and triangular waveform generators (determine period and frequency), saw tooth wave generator, Astable multi-vibrator, Monostable and Bistable Multivibrator.

Active RC Filters: Idealistic & Realistic response of filters (LPF, BPF, HPF, BRF), Butter worth & Chebyshev approximation filter functions.

UNIT-IV

Introduction to 555 Timer IC: Functional and block diagram of 555 timer, Application of 555 timer as astable and monostable multivibrator. Operational transconductance amplifier (OTA)-C filters, OTA integrator & differentiator.

Introduction to IC phase locked loops, IC voltage regulators and IC VCO.

Text Book (s):

1. S Salivahanan,V.S. Kanchana Bhaskaran, "Linear Integrated Circuits" TMH.

2. Ramakant A Gayakwad "Op - Amps and Linear Integrated Circuits", PHI.

Reference Book (s):

1. D. Roy Choudhary, Shail B Jain, "Linear Integrated Circuits" New Age Publisher, 1999

2. M. Rashid, "Microelectronic Circuit", Cengage Learning Publication.

3. Sedra & Smith, "Micro Electronic Circuits" Oxford University Press, 2000

4. David A Bell, "Operational Amplifiers and Linear IC's", PHI.

ANALOG AND DIGITAL COMMUNICATION (BVMC203)

OBJECTIVES AND PRE-REQUISITES:

The objective of teaching this subject is to introduce the students to working of different communication systems and modulation techniques. The student is expected to have a basic understanding of different active and passive circuit elements.

Learning Outcomes: The student is expected to develop a basic understanding of the advantages and limitations of various analog and digital modulation systems on a comparative scale and relate to them while studying practical communication systems.

UNIT-I

Introduction: Need for modulation and demodulation in communication systems, Basic scheme of modern communication system, Frequency spectrum of RF and Microwaves and their applications.

Amplitude Modulation: Derivation of mathematical expression for an amplitude modulated wave showing Carrier and side band components; Significance of Modulation index, spectrum and bandwidth of AM wave, relative power distribution in carrier and sidebands; Elementary idea of DSB-FC, DSB-SC, SSB-SC, ISB and VSB modulations, their comparison and areas of applications; Generation of AM using: Collector Modulator, Balanced Modulator. Principles of demodulation of AM wave using diode detector circuit and synchronous detector.

UNIT-II

Angle Modulation: Derivation of expression for frequency modulated wave and its frequency spectrum (without proof and analysis of Bessel function), modulation index, maximum frequency deviation and deviation ratio, BW of FM signals, Carlson's rule; Derivation of expression for phase modulated wave, comparison with frequency modulation. Principles of FM Modulators: Armstrong phase modulator, Armstrong FM transmitters. Basic principles of FM detection using Phase Locked Loop (PLL).

UNIT-III

Pulse Modulation: Statement of sampling theorem & elementary idea of sampling frequency for pulse modulation.

Types of Pulse modulation: PAM (Single polarity, double polarity), PWM (Generation & demodulation of PWM), PPM (Generation of PPM); PCM (Generation & demodulation of PCM); Digital to Digital Modulation: RZ, NRZ, AMI, HDB3; Manchester, Differential Manchester, CMI; Digital to Analog Modulation: ASK, FSK, PSK, QPSK, QAM, and GMSK.

UNIT-IV

Noise and Multiple Access Techniques: Bit rate & Baud rate Noise; Noise in Analog communication System: Noise in AM System, Noise in DSB& SSB System, Noise in Angle Modulation Systems: Threshold effect in Angle Modulation System, Effect of noise on FM carrier, noise triangle, need for pre-emphasis and de- emphasis, capture effect; Comparison of FM and AM communication systems. Distortion, Attenuation, Transmission Units (db, Neper, dbm, dbmO, dbmi); S/N Ratio and Noise Figure. Multiplexing & Multiple Access Technique, Need of Multiplexing, Time & Frequency Division Multiplexing, Multiple Access Types, Comparisons between Multiple Access Techniques.

Text Book(s):

1. Louis E. Frenzel Jr.,"Principles of Electronic Communication Systems",3/e MGH, 2008.
2. Wayne Tomasi, "Advanced Electronic Communications Systems" Pearson, 2013.
3. Kennedy and Davis, "Electronic Communication Systems" TMH, 1999.

Reference Book(s)

1. Simon S. Haykin, Michael Moher, "An Introduction to Analog and Digital Communications" John Wiley, 2006.
2. B P Lathi, "Modern Digital and Analog Communication Systems", 3/e Oxford press.

ENVIRONMENTAL SCIENCE (BVMC204)

The objective of this course is to make students environment conscious. They will be exposed through the fundamental concepts of environment and ecosystem so that they can appreciate the importance of individual and collective efforts to preserve and protect our environment. This course must raise various questions in student's mind that how our environment is inter dependent on various factors and how human being must care for their natural surroundings.

UNIT-I

Environmental Studies: Ecosystems, Bio-diversity and its Conservation.

i. The Multidisciplinary Nature of Environmental Studies Definition, scope and importance of Environmental Studies, Biotic and a biotic component of environment, need for environmental awareness.

ii.   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, struct ures and function of the following ecosystem:

a.   Forest ecosystem

b.   Grassland ecosystem

c.   Desert ecosystem

d.   Aquatic ecosystem (ponds, streams, lakes, rivers, oceans, estuaries).

iii.   Bio-diversity and its Conservation

Introduction to biodiversity - definition: genetic, species and ecosystem diversity, Bio-geographical 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, rare endangered and threatened species(RET) endemic species of India, method of biodiversity conservation: In-situ and ex-situ conservation.

UNIT-II

Natural Resources: problems and prospects

Renewable and Non-renewable Natural Resources; Concept and definition of Natural Resources and need for their management

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, Water conservation, rain water harvesting, watershed management.

Mineral resources: Uses are exploitation, environmental effects of extracting and using mineral resources, case studies.

Food resources: World food problems, changes causes by agriculture and over-grazing, 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, Urban problems related to energy, case studies.

Land resources: Land as a resource, land degradation, man induced landslides, soil erosion and desertification.

UNIT-III

Environmental Chemistry and Pollution Control

I.   Chemistry of Environment

   a.   Green Technology: Principles of Green technology, Zero Waste Technology, Green Chemistry & Its basic principles, Atom Economy, Green Methodologies, clean development mechanisms (CDM), concept of environmental impact assessment,

   b.   Eco-Friendly polymers: Environmental degradation of polymers, Biodegradable, Photo-biodegradable polymers, Hydrolysis & Hydrobiodegradable, Biopolymers & Bioplastics: polylactic acid, polyhydroxybutyrate, polycaprolactone,. Concept of bioremediation.

ii.   Environmental Pollution

Definition, types, causes, effects and control measures of (a) Air pollution, (b) Water pollution, (c) Soil pollution, (d) Marine pollution, (e) Noise pollution, (f) Thermal pollution, (g) Nuclear hazards. Pollution case studies. Solid waste and its management: causes, effects and control measures of urban and industrial waste. Chemical toxicology-Terms related to toxicity, impact of chemicals (Hg, As, Cd, Cr, Pb) on environment.

UNIT-IV

Disaster Management, Social Issues, Human Population and the Environment

i.   Disaster Management

Disaster management: floods, earthquake, cyclone and land-slides, nuclear accidents and holocaust, case studies.

ii.   Social Issues, Human Population and the Environment

Sustainable development, Climate change, global warming, acid rain, ozone layer depletion, Environmental ethics: Issues and possible solutions, Consumerism and waste products, Wasteland reclamation. Population growth, problems of urbanisation, Environment Protection Act, 1986; Air (Prevention and Control of Pollution) Act, 1981; Water (Prevention and

Control of Pollution) Act, 1974; Wildlife Protection Act, 1972; Forest Conservation Act, 1980; Environmental management, system standards-ISO 14000 series.

Text Book(s):

1. E. Barucha, TextBook(s) of Environmental Studies for Undergraduate Courses, Universities Press (India) Pvt. Ltd., 2005.
2. S. Chawla, A TextBook(s) of Environmental Studies, McGraw Hill Education Private Limited, 2012

References Book(s):

1. G. T. Miller, Environmental Science, Thomas Learning, 2012
2. W. Cunningham and M. A. Cunningham, Principles of Environment Science: Enquiry and Applications, Tata McGraw Hill Publication, N. Delhi, 2003.
3. R. Rajagopalan, Environmental Studies: From Crisis to Cure, 2nd Edition, Oxford University Press, 2011.
4. A.K. De, Environmental Chemistry, New Age Int. Publ. 2012,,
5. A. Kaushik and C.P. Kaushik, Perspectives in Environment Studies, 4th Edition, New Age International Publishers, 2013
6. Environmental Engineering by Gerard Kiely, Tata McGraw-Hill Publishing Company Ltd. New Delhi,

OPEN ELECTIVE-II (SELECT ANY ONE) ELECTRONICS MEASUREMENTS AND INSTRUMENTATION (BVMC205A)

OBJECTIVE:

The Objective of the course is to introduce fundamentals of Electronics instruments and measurement providing an in-depth understanding of Measurement errors, bridge measurement, basics of transducers, analyzer and multimeter.

Pre-requisites: Basic Knowledge of different Electronics and Electrical quantities to be measured.

Learning Outcomes: Trouble shooting of electronic equipment is an essential requirement of Service sector industry. This course will help to develop skills to become professional technician with capability to measure electrical parameters using various instruments.

UNIT-I

Basics of Measurement: Performance Characteristics of Instruments: Static Characteristics, Dynamic Characteristics.

Errors in Measurement: Types of Static Errors, Gross Errors, Systematic Errors, Random Errors, Sources of Errors and minimization of error. Basic block diagram of an Electronic Measurement system.

Basic Meter Movement: Moving Coil and Moving Iron type of instruments. Electrical Standards & Calibration.

UNIT-II

Basic Instruments: Block diagram of a Multimeter; DC Ammeter, Multi range ammeters, Extending of ammeter ranges, Effect of frequency on calibration. DC Voltmeter, Multi range voltmeter, extending Voltmeter ranges, Transistor Voltmeter, Chopper type DC amplifier Voltmeter (Micro-voltmeter), True RMS Voltmeter. Digital Metering: Ramp type DVM, Dual slope

integrating type DVM (Voltage to Time conversion), Integrating type DVM (Voltage to Frequency Conversion), Resolution and sensitivity of digital meters, General specifications of a DVM, Digital frequency meter, Universal counter and Electronic counter.

UNIT-III

Cathode Ray Oscilloscope: Basic Principle, CRT features, Block diagram of oscilloscope, single/dual beam CRO, dual trace oscilloscope. Measurement of phase and frequency by Lissajious figures method. Explanation of time base operation and need for blanking during fly back; synchronization; standard specifications of a CRO, Special features of dual trace, delayed sweep, probes for CRO, Digital storage Oscilloscope: Block diagram and principle of working.

UNIT-IV Electronic Instruments

Fixed / Variable Frequency AF Oscillator, Function Generator, (sine, square and triangular wave generator). Digital Data Recording, Digital Memory Waveform Recorder (DWR). Introduction to transducers; Data Acquisition System: Introduction and Objective of a DAS.

Text Book(s):

1. A.K.Sawhney, A course in Elect. & Electronic Measurement and Instrumentation, Dhapat Rai & Co.
2. Golding & Widis, Electrical Measurement and Measurement instrument, Wheelar Book(s)
3. H.S. Kalsi, Electronic Instruments, Tata Mc-Graw hill.
4. A.D. Heltric & W.C. Copper, Modern Electronic instrumentation & Measuring instruments, Wheeler Publication. 8. H.K.P. Neubert, Instrument transducers, Oxford University press.

Reference Book(s):

1. Carr, Elements of Electronic Instrumentation and Measurement, Pearson Education.
2. D. Patranabis, Sensors & Transducers, PHI.
3. A.J. Bouwens, Digital Instrumentation, Tata Mc-Graw hill.

INDUSTRIAL ELECTRONICS (BVMC205B)

OBJECTIVE:

To get an overview of different types of power semiconductor devices and their switching characteristics. To understand the operation, characteristics and performance parameters of controlled rectifiers to know the practical application for power electronics converters in conditioning the power supply. Pre-requisites: Students should be well aware of semiconductor devices like diode and transistors.

Learning Outcomes: Able to understand the operation of basic power electronic devices, operation of choppers converters and inverters and able to understand practical application for power electronics converters in conditioning the power supply.

UNIT-I

Power Devices: Need for semiconductor power devices, Power diodes, Enhancement of reverse blocking capacity, Introduction to family of thyristors. Silicon Controlled Rectifier (SCR): structure, VI characteristics, Turn-On and Turn-Off characteristics, ratings, Factors affecting the characteristics/ratings of SCR, Gate-triggering circuits, Control circuits design and Protection circuits, Snubber circuit.

UNIT-II

Diac and Triac: Basic structure, working and V-I characteristics, application of a Diac as a triggering device for a Triac.

Insulated Gate Bipolar Transistors (IGBT): Basic structure, I-V Characteristics, switching characteristics, device limitations and safe operating area (SOA) etc.

Application of SCR: SCR as a static switch, phase controlled rectification, single phase half wave, full wave and bridge

rectifiers with inductive & non-inductive loads; AC voltage control using SCR and Triac as a switch.

UNIT-III

Thyristor Commutation Techniques: Introduction, natural commutation, forced commutation, self commutation, impulse commutation, response pulse commutation, external pulse commutation, load side commutation, line side, commutation, complementary commutation.

UNIT- IV

Invertors and Power Supplies: Introduction to invertors, Principle of operation, single phase bridge inverters, Voltage control of single phase inverters; Introduction to power supply, AC and DC power supply, Switched mode DC power supplies.

Text Book(s):

1. Bhattacharya / S Chatterjee.S.K, "Industrial Electronics and Control", TMH, 1995.
2. Sen "Power Electronics"
3. Power Electronics Circuits Devices & Applications, M.R.Rashid -Prentice Hall

References Book(s):

1. James T. Humphries, Leslie P., "Industrial Electronics", Delmar Publications,1993.
2. Power Electronics & Controls, S.K. Dutta
3. Power Electronics, M.D. Singh & K.B. Khanchandani, TMH

PRACTICAL/VIVA VOCE (SELECT ANY ONE LAB BASED ON OPEN ELECTIVE-II) ELECTRONICS MEASUREMENTS AND INSTRUMENTATION LAB (BVMC206A(P))

LIST OF EXPERIMENTS:

1. Study and measurement of voltage, frequency and phase difference of a.c. quantities using C.R.O.
2. Measurement of rise and fall times using a CRO
3. Study and measurement of quantities using D.S.O.
4. Study of function generator.
5. To observe the limitations of a multimeter for measuring high frequency voltages and Currents.
6. Observe the Loading effect of an Analog Multimeter/Digital Multimeter.
7. Measurement of resistance, voltage and current using digital multimeter / clamp meter.
8. Calibration of Ammeter and Voltmeter.
9. Measurement of voltage, current and resistance using dc potentiometer.
10. To measure Q of a coil and observe its dependence on frequency, using a Q-meter

11. Measurement of resistance using Wheatstone's Bridge.
12. Measurement of current/ voltage using Hall effect transducer.
13. Measurement of low resistance by Kelvin's bridge;
14. Measurement of inductance by Maxwell"s bridge.
15. Measurement of capacitance by Schering bridge.
16. Measurement of resistance, inductance and capacitance using digital RLC bridge.
17. Measurement of frequency and time period using digital frequency meter.

INDUSTRIAL ELECTRONICS LAB (BVMC206B(P))

LIST OF EXPERIMENTS:

1. Study of I-V characteristics of DIAC
2. Study of I-V characteristics of a TRIAC
3. Study of I-V characteristics of a SCR
4. SCR as a half wave and full wave rectifiers with R and RL loads
5. DC motor control using SCR.
6. DC motor control using TRIAC.
7. Illumination control circuit using SCR.
8. AC voltage controller using TRIAC with UJT triggering.
9. Study of parallel and bridge inverter.
10. Design of snubber circuit
11. VI Characteristic of MOSFET
12. Study of chopper circuits

PRACTICAL/VIVA VOCE PROGRAMMING SKILLS USING C LAB (BVMC207P)

LIST OF EXPERIMENTS:

1. Programs to illustrate the data types and simple arithmetic operators (i.e. area of a circle, conversion of Temperature units)
2. Programs to illustrate the conditional structure (i.e. largest of three numbers, simple calculator by switch – case)
3. Programs to illustrate the loop structure (find sum of a geometric series, find sum of first n natural numbers etc.)
4. Programs to illustrate 1- D array (i.e. find average of marks of a class in one subject)
5. Programs on function (i.e. to find the factorial of a number, to find the HCF of two nos).
6. Programs on function (to highlight the difference between call by value and call by reference)

7. Programs on library functions by using header files (i.e string and char functions).
8. Programs to illustrate 2-D array (i.e. program for matrices addition, Subtraction, multiplication)
9. Programs on structure (i.e.An array of record contains information of employees of a company. Display all the data of those employees having salary > 20000.)
10. Programs on union (to illustrate the difference and similarity between structure and union).
11. Programs on binary file (i.e. Store records of a student in a Binary File "Student.dat" read the file and display the content of the file.)
12. Programs on text file (i.e., to count the no of Lowercase, Uppercase and special characters presents in a text file).

LINEAR INTEGRATED CIRCUITS LAB (BVMC208P)

LIST OF EXPERIMENTS:

1. To study the op-amp (IC 741) as inverting and non-inverting amplifier and calculate its gain.
2. Observe and plot the output Wave shape of Op-Amp R-C differentiating circuits, R-C integrating circuits for triangular/ square wave input.
3. To study the op-amp (IC 741) as adder and voltage follower, calculate its output voltage.
4. Construct a combinational clipper circuit for positive and negative peak clipping of a sine wave.
5. Construct biased and unbiased clamping circuits.
6. To study RC phase shift/Wien Bridge oscillator measurement of frequency and amplitude of oscillations using Op-Amp.
7. To study the waveform of square wave generator using 741 Op-Amp IC.
8. To study the waveform of Schmitt Trigger circuit using 741 OP-AMP IC.
9. To make and test the operations of Monostable Multivibrator circuits using 555 timer.
10. To make and test the operations of Astable Multivibrator circuits using 555 timer.
11. To study Voltage controlled Oscillator.
12. To study Phase Locked Loop IC.

ANALOG AND DIGITAL COMMUNICATION LAB (BVMC209P)

LIST OF EXPERIMENTS:

1. To observe the AM pattern on CRO and measure modulation index of the AM signal for different levels of modulating signal.
2. To obtain a FM wave and measure the frequency deviation for different modulating signals.

3. To obtain modulating signal from an AM detector circuit and observe the pattern for different RC time constants and obtain its optimum value for least distortion.

4. To obtain modulating signal from a FM detector (PLL) circuit and plot the discriminator characteristics.

5. To observe the sampled signal and compare it with the analog input signal. Note the effect of varying the sampling pulse width and frequency on the sampled output.

6. To verify the sampling theorem.

7. To time division multiplex the two given signals.

8. To study PAM and its reconstruction.

9. To study the Generation and Reconstruction of PWM/PPM.

10. To study ASK and FSK modulation and demodulation.

11. To study PSK, QPSK and DPSK modulation.

12. To study Minimum Shift Keying modulation and demodulation.

13. To measure the quantization noise in a 3 bit/4 bit coded PCM signal.

14. To feed an analog signal to a PCM modulator and compare demodulated signal with the analog input.

15. Also note the effect of low pass filter at the demodulated output.

ENVIRONMENTAL SCIENCE LAB / FIELD WORK (BVMC210P)

LIST OF EXPERIMENTS:

1. Determination of pH, conductivity and turbidity in drinking water sample.

2. Determination of pH and conductivity of soil/sludge samples.

3. Determination of moisture content of soil sample.

4. Determination of Total Dissolved Solids (TDS) of water sample.

5. Determination of dissolved oxygen (DO) in the water sample.

6. Determination of Biological oxygen demand (BOD) in the water sample.

7. Determination of Chemical oxygen demand (COD) in the water sample.

8. Determination of Residual Chlorine in the water sample.

9. Determination of ammonia in the water sample.

10. Determination of carbon dioxide in the water sample.

11. Determination of nitrate ions or sulphate ions in water using spectrophotometer.

12. Determination of the molecular weight of polystyrene sample using viscometer method.

13. Base catalyzed aldol condensation by Green Methodology.

14. Acetylation of primary amines using eco-friendly method.

15. To determine the concentration of particulate matter in the ambient air using High Volume Sampler.

PROJECT-I
(BVMC211P)

The student has to submit a synopsis at the beginning of the semester for approval from the departmental committee/ project guide in a specified format, thereafter he/she will have to present the progress of the work through seminars and progress reports.

Project means, for solving live problems faced by telecom industries, or developing an application or hardware prototype, by applying the knowledge and skills obtained through the vocational course in the relevant field.

The students will submit a project report in a presentable manner (printed copy) and give a power point presentation for evaluation by the teacher guide, and an external examiner/ expert from the industry.

INDUSTRIAL TRAINING-I
(BVMC212P)

SEMESTER III

TELECOM INFRASTRUCTURE AND GROUNDING (BVMC301)

OBJECTIVES AND PRE-REQUISITES:

The students should have studied the concept of grounding, aware of different type of tools like Allen key, crimping tools etc. Identify different components of telecom support infrastructure and their role. To train a student in the various aspects of grounding of electrical systems. Starting from the basics of grounding itself, the course attempts to develop an understanding of need grounding in various equipment and telecommunications systems

Learning Outcomes and Deliverables: The student should be well verse with different type of BTS, their installation, safety precautions and the concept of grounding.

Unit-I

Components of telecom support infrastructure: Identification and their role. Identification of various components of BTS, Method of site selection for BTS, Government norms for BTS. Different type of towers. Methods of installation of ground base and roof top tower.

Fire safety and fire protection system. Safety while working on towers and antenna installation, fall protection system, hand and arm protection, fall prevention and anchorage. Personal protection equipment. Safety precaution while working on high voltage, electrical safety parameters, Device sensitive to static, Safety to RF and Microwave radiation, SAR limit, Ionizing & Non- Ionizing radiation, Biological effect caused by RF radiation.

Unit-II

Introduction to different types of feeder cables used in telecom, optical connectors and components used in Optical Fibre systems, splitters and their applications. Installing NEC Pasolink microwave Transmitter/Receiver, MUX configuring at cell sites, Concept of measuring VSWR using site master. Major subsystems of a power plant; functions of different components of power plant and their function; Valve- Regulated Lead-Acid Batteries, Determination of State of Charge of VRLA Batteries, Battery Monitoring, Do's and Don'ts for VRLA battery. Working and maintenance of UPS, Inverter, PIU.

Unit-III

Grounding: Basics of grounding, Bonding, Static charges and the need for bonding, , Noise in signalling circuits and shielding. Equipment grounding: Shock hazard, grounding of equipment, Operation of protective devices, Touch Potential during ground faults, Induced voltage problem and its mitigation, EMI suppression, Sensing of ground faults, equi-potential bonding.

Ground electrode system: Grounding electrodes and factors affecting their efficacy, Soil resistance, Measurement of soil resistivity, Resistance of a single rod electrode, Current-carrying capacity of an electrode, Use of multiple ground rods in parallel, Measurement of ground resistance of an electrode, Concrete-encased electrodes, Maintenance of grounding system, Chemical electrodes.

Unit-IV

Lightning: Method of lightning protection (Light Arrestor, HRC Fuses), Effect of lightning strike on electrical lines.

Surge protection of electronic equipment: Introduction, Bonding of different ground systems as a means of surge proofing, Principle of surge protection, Achieving graded surge protection, Positioning and selection of lightning/surge arrestor, practical view of surge protection for sensitive equipment.

Text Books:

1. "Practical Grounding, Bonding, Shielding and Surge Protection", G Vijayaraghavan, Mark Brown, Malcolm Barnes, 1st edition, 2004, Newnes, Elsevier
2. Hans Gumhalter, Power Supply in Telecommunications, 3rd Edition, Springer-Verlag Berlin Heidelberg, (1995).
3. Fraidoon Mazda, Telecommunications Engineer's Reference Book, 2E, Elsevier, (1998)

Reference Book(s):

1. Electrical Safety: Safety and health for Electrical Trades, Student Manual, DHHS (NIOSH) Publication, (2009) www.cdc.gov/niosh/docs/2009-113/pdfs/2009-113.pdf
2. White Paper By Wissam Balshe, Power system considerations for cell tower applications: https://www.cumminspower.com/www/literature/technicalpapers/PT-9019-Cell-Tower-Applications- en.pdf
3. Political Economy Research Institute (PERI), Handbook of International Electrical Safety Practices, (Wiley-Scrivener) [1 ed.], (2010)
4. EETP/BSNL, Telecom Support Infrastructure, course material. (Telecom Infrastructure power plant, battery, ups and earthing, etc.)
5. "Methodology and Technology for Power System Grounding", Jinliang He, Rong Zeng, Bo Zhang, 2011 edition, Wiley
6. "Power System Grounding and Transients: An Introduction", A.P. Sakis Meliopoulis, 1988 edition, Marcel Dekker Inc.

ELECTROMAGNETICS & TRANSMISSION LINES (BVMC302)

OBJECTIVE:

To list Maxwell's equations and solve them for specific regular geometries , understand general electromagnetic wave propagation and how the plane wave solution can be used to approximate real situation, describe the boundary conditions for electric and magnetic fields at dielectric interfaces ,interpret the effects of lossy and low loss dielectrics upon the propagation of electromagnetic waves, and predict this process in specific applications and solve the performance of specific transmission lines.

UNIT-I

Introduction: Vector representation of surface, Physical interpretation of gradient, divergence and curl, Transformation of vectors in different co-ordinate systems, dirac-delta function.

Electrostatics: Electric field due to point-charges, line charges and surface charges, Electrostatic potential, Solution of Laplace and Poisson's equation in one dimension, Electric flux density, Boundary conditions

UNIT- II

Magnetostatics: Magnetic Induction and Faraday's Law, Magnetic Flux Density, Magnetic Field Strength H, Ampere, Gauss Law in the Differential Vector Form, Permeability, Energy Stored in a Magnetic Field, Ampere's Law for a Current Element, Volume Distribution of Current, Ampere's Law Force Law, Magnetic Vector Potential.

UNIT- III

Electromagnetic Waves: Maxwell's Equations: The Equation of Continuity for Time Varying Fields, Inconsistency of Ampere's Law, Displacement current, Maxwell's Equations in differential and integral form, Conditions at a Boundary Surface.

Plane wave equation and its solution in conducting and non-conducting media, Phasor notation, Phase velocity, Group velocity, Depth of penetration, skin depth, Impedance of conducting medium. Polarization, Reflection and refraction of plane waves at plane boundaries, Poynting vectors, and Poynting theorem.

UNIT IV

Transmission Lines: Transmission line equations, Characteristic impendence, Distortion-less lines, Input impendence of a loss less line, Open and Short circuited lines, Standing wave and reflection losses, Impedance matching, Loading of lines, Input impedance of transmission lines, RF lines, Relation between reflection coefficient and voltage standing wave ratio (VSWR), Lines of different lengths – $\lambda/2$, $\lambda/4$, $\lambda/8$ lines, Losses in transmission lines.

Text Books:

1. Matthew N. O. Sadiku , "Elements of Electromagnetics", Oxford University Press
2. E. C. Jordon, K. G. Balman, "Electromagnetic Waves & Radiation System", PHI – 2nd Edition

Reference Book(s):

1. William H. Hayt, "Engineering Electromagnetics", TMH
2. J.D. Kraus, "Electromagnetics", TMH
3. David K. Cheng," Field and Wave Electromagnetic", 2nd Edition, Pearson Education Asia, 2001

PROGRAMMING IN JAVA (BVMC303)

OBJECTIVES AND PRE-REQUISITES:

Knowledge of basics of programming- constructs and principles is a prerequisite to this course. Programming through Java is taught in this course to enable secure development of software. Learning Outcomes: The student after completing the course will be able to:

1. Describe the major features of object oriented programming.
2. Use Java programming constructs to develop object based programs.
3. Use inbuilt library functions to enable exception handling and create threads for efficient use of system resource.

UNIT-I

Concept of Classes and Objects, Encapsulation, Access Control, Inheritance, Polymorphism.
Introduction to Java, Installing Java, JDK Directory Structure, Java Virtual Machine, World Wide Web and Java, Program Structure, Output in Java.

Datatypes and Variables: Primitive Datatypes, Variable Names, Numeric Literals, Character Literals, Java Tokens, String Literals.

Conversions Between datatypes, Arithmetic Operators, logical operators, Control flow.

UNIT-II

JAVA Classes, Working with Objects, Packages and Interfaces: Introduction to Packages, Inheritance, Interfaces, Abstract methods and Classes, Calling Methods, Defining Methods, Method Parameters, Method Overriding, Method Overloading, Constructor.

UNIT-III

Exception Handling: Exceptions Overview, Declaring Exceptions, Defining and Throwing Exceptions, Errors and Runtime Exceptions, Catching Exceptions, The finally Block, Exception Methods, I/O Exceptions vs. Runtime Exceptions. Creating Threads, Life Cycle of a Thread, Thread Methods, Using Threads, Synchronization of Threads.

UNIT-IV

JAVA Applets: Introduction, Applet Examples, java.applet.* Class, The Five Stages of an Applet's Life Cycle, Methods for Adding UI Components, Methods for Drawing and Event Handling. JAVA AWT: Introduction, Control Classes.

Text Book(s):

1. E. Balaguruswamy, "Programming with Java", TMH
2. Patrick Naughton and Herbertz Schidt, "Java-2 the complete Reference", TMH

Reference Book(s):

1. Sierra & Bates, "Head First Java", O'Reilly
2. Horstmann, "Computing Concepts with Java 2 Essentials", John Wiley.
3. Decker & Hirshfield, "Programming.Java", Vikas Publication.
4. Programming With Java – John R. Hubbard, 2nd Edition, TMH.

DATABASE MANAGEMENT SYSTEMS (BVMC304)

OBJECTIVE:

The concepts related to database, database techniques, SQL and database operations are introduced in this subject. This creates strong foundation for application data design.

UNIT-I

Introductory Concepts of DBMS: Introduction and application of DBMS, Data Independence, Database System Architecture – levels, Mapping, Database users and DBA, Entity – Relationship model, constraints, keys, Design issues, E-R Diagram, Extended E-R features- Generalization, Specialization, Aggregation, Translating E-R model into Relational model.

UNIT-II

Relational Model: The relational Model, The catalog, Types, Keys, Relational Algebra, Fundamental operations, Additional Operations-, SQL fundamentals, DDL,DML,DCL PL/SQL Concepts, Cursors, Stored Procedures, Stored Functions, Database Integrity – Triggers.

UNIT-III

Functional Dependencies, Non-loss Decomposition, First, Second, Third Normal Forms, Dependency Preservation, Boyce/ Codd Normal Form, Multi-valued Dependencies and Fourth Normal Form, Join Dependencies and Fifth Normal Form.

UNIT-IV

Implementation Techniques: Overview of Physical Storage Media, File Organization, Indexing and Hashing, B+ tree Index Files, Query Processing Overview, Catalogue Information for Cost Estimation, Selection Operation, Sorting, Join Operation, Materialized views, Database Tuning.

Text Book(s):

1. Abraham Silberschatz, Henry F. Korth, S. Sudharshan, "Database System Concepts", 5th Edition, Tata McGraw Hill, 2006
2. Elmsari and Navathe, "Fundamentals of Database Systems", 6th Ed., Pearson, 2013

Reference Book(s):

1. C.J.Date, A.Kannan, S.Swamynathan, "An Introduction to Database Systems", 8th Edition, Pearson Education, 2006.
2. J. D. Ullman, "Principles of Database Systems", 2nd Ed., Galgotia Publications, 1999.
3. Vipin C. Desai, "An Introduction to Database Systems", West Publishing Co.,

DATA COMMUNICATION & NETWORKS (BVMC305)

OBJECTIVE:

The objective of the paper is to provide an introduction to the fundamental concepts on data communication and the design, deployment, and management of computer networks.

UNIT- I

Data Communications: Components, standards and organizations, Network Classification, Network Topologies; network protocol; layered network architecture; overview of OSI reference model; overview of TCP/IP protocol suite.

Physical Layer: Cabling, Network Interface Card, Transmission Media Devices- Repeater, Hub, Bridge, Switch, Router, Gateway.

UNIT- II

Data Link Layer: Framing techniques; Error Control; Flow Control Protocols; Shared media protocols - CSMA/CD and CSMA/CA.

UNIT- III

Network Layer: Virtual Circuits and Datagram approach, IP addressing methods – Subnetting; Routing Algorithms (adaptive and non-adaptive); Network Layer Protocols: IPV4 and IPV6.

UNIT- IV

Transport Layer: Process to Process Delivery: UDP; TCP, congestion control and Quality of service. Application Layer: Client Server Model, Socket Interface, Domain Name System (DNS): Electronic Mail (SMTP), file transfer (FTP), HTTP and WWW.

Text Book(s):

1. A. S. Tannenbum, D. Wetherall, "Computer Networks", Prentice Hall, Pearson, 5th Ed [T2] Behrouz A. Forouzan, "Data Communications and Networking", Tata McGraw-Hill, 4th Ed

Reference Book(s):

1. Fred Halsall, "Computer Networks", Addison – Wesley Pub. Co. 1996.
2. Larry L, Peterson and Bruce S. Davie, "Computer Networks: A system Approach", Elsevier, 4th Ed
3. Tomasi, "Introduction to Data Communications & Networking", Pearson 7th impression 2011
4. William Stallings, "Data and Computer Communications", Prentice Hall, Imprint of Pearson, 9th Ed.
5. Zheng , "Network for Computer Scientists & Engineers", Oxford University Press
6. Data Communications and Networking: White, Cengage Learning

OPEN ELECTIVE-III (SELECT ANY ONE)
ORGANIZATIONAL BEHAVIOUR (BVMC306A)

OBJECTIVE:

The aim of this paper is to provide managerial skills in the students.

UNIT-I

Introduction: Concept and nature of Organizational Behaviour; Contributing disciplines to the field of O. B.; Models; Need to understand human behaviour; Challenges and Opportunities, Management functions, Tasks and responsibilities of a professional manager; Managerial skills.

UNIT-II

Individual & Interpersonal Behaviour: Biographical Characteristics; Ability; Values; Attitudes-Formation, Theories, Organization related attitude, Relationship between attitude and behaviour; Personality – determinants and traits; Emotions; Learning-Theories and reinforcement schedules, Perception –Process and errors.

UNIT-III

Organization Structure and Process: Organizational climate and culture, Organizational Structure and Design, Managerial Communication, Motivation, Stress and its management, Decision Making: Organizational Context of Decisions, Decision Making Models; Problem Solving.

UNIT-IV

Interactive Aspects of Organizational Behaviour: Interpersonal Behaviour: Johari Window; Transactional Analysis – ego states, types of transactions, life positions, applications of T.A, Group Dynamics; Management of Organizational Conflicts; Leadership Styles.

Text Book(s):

1. Luthans Fred., "Organizational Behaviour", McGraw Hill, 2010, 12th ed.
2. Robbins & Judge (15th ed.), "Essentials of Organizational Behaviour", Pearson 2012.

References Book(s):

1. Stoner, R. James A.F., Edward Freeman Daniel R Gilbert Jr., Management 6TH Ed, PHI
2. George, J. M. & Jones, G.R. (2009). Understanding and Managing Organizational Behaviour, 5th Edition, Pearson Education.
3. Green Berg, J. and Baron, R.A. (2008), Behaviour in Organization. Prentice Hall of India.
4. Mcshane, S.L., Von Glinow, M.A., Sharma, R.R. (2006) Organizational Behaviour. Tata McGrawHill.

OPERATIONS RESEARCH (BVMC306B)

OBJECTIVE:

The objective of the paper is to acquaint the student with mathematical techniques being adopted in industry which help managers in decision taking.

UNIT-I

Linear Programming: Formulation of LP Problem. Graphical method, Simplex method for maximization and minimization LP Problems. Duality in Simplex Problems,

Queuing Theory: Introduction to probability concept for queuing problems. Basic structure, Terminology, Classification, Birth and Death Process. Queuing Models

UNIT-II

Transportation Models: MODI method for optimality check, North West Corner Method, Least-cost Method and Vogel's Approximation Method (VAM) for solving balanced and unbalanced transportation problems.

Problems of degeneracy and maximization.

Assignment Models: Assignment model for maximization & minimization problems. Travelling Salesman Problems, Industrial Problems.

UNIT-III

Sequencing Theory: Processing of n-jobs through m-machines with each job having same processing order.

Processing of two jobs through m-machines with each job having different processing order.

Decision Theory: Decision making under uncertainty and under risk, Multistage decision making, Multi criteria decision making.

UNIT-IV

Network Models: Introduction to PERT and CPM. Fundamental concept of Network models and construction of network diagrams. Activity time estimates. Critical path and project time duration. Probability of completing the project on or before specified time. Concept of Float and slack.

Game Theory: Two person zero-sum games. Minimax and Maximin principle. Arithmetic, Algebraic, Matrix Algebra method. Solution by Dominance, Subgame, Graphical method, Linear programming method.

Text Book(s):

1. Hira and Gupta, "Operation Research" S. Chand Publications
2. H.A. Taha, "Operations Research", Prentice-Hall India, 6th Edition, 2004.

Reference Book(s):

1. S.Kalavathy, "Operations Research", Vikas Publication, 4th Edition, 2013.
2. N.D. Vohra, "Operations Research", Tata McGraw Hill, 2004.
3. Richard Bronson, Govindasami Naadimuthu, "Operations Research", Tata McGraw Hill, 2004
4. A.P. Verma, "Operations Research", S.K. Kataria & Sons, 2004.
5. J.K. Sharma, "Operation Research", Macmillan India Ltd. 2005.

INDUSTRIAL MANAGEMENT (BVMC306C)

OBJECTIVE:

The course provides a broad introduction to some aspects of business management and running of business organization.

UNIT-I

Industrial relations- Definition and main aspects. Industrial disputes and strikes. Collective bargaining.

Labour Legislation- Labour management cooperation/worker's participation in management. Factory legislation. International Labour Organization.

UNIT-II

Trade Unionism- Definition, Origin, Objectives of Trade Unions. Methods of Trade unions. Size and finance of Indian Trade unions-size, frequency distribution, factors responsible for the small size. Finance-sources of income, ways of improving finance.

UNIT-III

Work Study- Method study and time study. Foundations of work study. Main components of method study. Time study standards. Involvement of worker's unions. Work Sampling. Application of work study to office work.

UNIT-IV

Quality Management- What is Quality? Control Charts. Quality is everybody's job. Taguchi Philosophy. Service Quality. What is Total Quality Management (TQM)? Roadmap for TQM. Criticism of TQM. Six Sigma.

Text Book(s):

1. Sinha, P.R.N., Sinha I.B. and Shekhar S.M.(2013), Industrial Relations, Trade Unions and Labour Legislation. Pearson Education
2. Chary, S.N. (2012), Production and Operations Management. Tata McGraw Hill Education.

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Reference Book(s):

1. Srivastava, S.C. (2012), Industrial Relations and Labour Laws, Vikas Publishing
2. Shankar R (2012), Industrial Engineering and Management. Galgotia Publications
3. Telsang, M. (2006), Industrial Engineering and Production Management. S.Chand
4. Thukaram, Rao (2004), M.E. Industrial Management. Himalaya Publishing House.

PRACTICAL/VIVA VOCE TELECOM INFRASTRUCTURE & GROUNDING LAB (BVMC307P)

LIST OF EXPERIMENTS:

1. Demonstration of different basic installation tools.
2. Identification and understanding the use of different optical components.
3. Demonstration of fire detection and use of fire extinguisher.
4. Installation of sector antenna
5. Installation of microwave antenna
6. Methods of feeder cable routing
7. Study of Installation procedure of internal and external grounding board
8. Tower climbing activity and use of safety kit.
9. Measurement of VSWR using site master.
10. To find the distance to fault in feeder cable using site master.
11. To splice the Optical Fibre using Fusion Arc Splicer.
12. To find the cable loss and cable break in optical fibre using OTDR(Optical Time Domain Reflecotometer).
13. Study of Valve Regulated Lead Acid battery (VRLA) and take different measurements.
14. Practical study of uninterrupted power supply.
15. Study of Installation procedure of Power Interface Unit.
16. Concept of series and parallel battery bank, Rating and capacity of cells in battery bank and its connection in power plant.
17. Maintenance procedure in battery bank system.
18. Determining height of the GSM and the MW antenna
19. Measurement of Antenna Height using Altimeter.
20. Measurement of Earth Resistivity using Earth Resistance meter.
21. Study of Installation of different types of grounding systems.
22. Study of Installation procedure of surge arrester.

PROGRAMMING IN JAVA LAB (BVMC308P)

1. Program to Create classes and use of different types of functions.
2. Programming using constructor.
3. Program to show different access level in java.
4. Programming using interfaces.
5. Programming creating packages and their use.
6. Programs using function overloading.
7. Programs using inheritance.
8. Programs using IO streams.
9. Programs using exception handling mechanism.
10. Program to illustrate functioning of multiple threads.
11. Programs to create and use the Applet.
12. Programs on swing to create Forms or GUI.

DATABASE MANAGEMENT SYSTEMS LAB (BVMC309P)

1. Design a Database and create required tables. For e.g. Bank, College Database
2. Apply the constraints like Primary Key, Foreign key, NOT NULL to the tables.
3. Write a SQL statement for implementing ALTER, UPDATE and DELETE
4. Write the queries to implement the joins
5. Write the queries for implementing the following functions: MAX (), MIN (),AVG (),COUNT ()
6. Write the queries to implement the concept of Integrity constrains
7. Write the queries to create the views
8. Perform the queries for triggers
9. Perform the following operation for demonstrating the insertion, updation and deletion using the referential integrity constraints

DATA COMMUNICATION & NETWORKS LAB (BVMC310P)

LIST OF EXPERIMENTS:

1. Identification of Connectors and Cables:
   a. Connectors: BNC, RJ-45, I/O box
   b. Cables: Co-axial, twisted pair, Optical fibre.
2. Identification of various networks components
   a. NIC (network interface card)
   b. Hub, Switch, Router.
3. Execution of basic networking Commands: Netstat, IPConfig, IfConfig, Ping, Arp-a, Nbtstat-a, Netdiag, Nslookup, Traceroute, Pathping
4. Design Ethernet Cables: Cross Cable, Straight Cable, Rollover Cable.
5. Demonstration to connect two computers with/without connecting device.
6. Demonstration of File sharing & Printer sharing.
7. Study of various topologies using topology trainer
8. Detailed study of Network and Internet Settings on PC.
9. Trouble shooting of networks & Installation of network device drivers.
10. Study of Router Configuration.
11. Logging into a router, Editing and Help features and Saving Router configuration.
12. Setting the Hostname, Descriptions, IP Address, and Clock Rate on a Router.
13. Introduction to Discrete Event Simulation

    Discrete Event Simulation Tools - ns2/ns3, Omnet++
14. Using Free Open Source Software tools for network simulation – I Preliminary usage of the tool ns3 Simulate telnet and ftp between N sources - N sinks (N = 1, 2, 3). Evaluate the effect of increasing data rate on congestion.
15. Using Free Open Source Software tools for network simulation - II Advanced usage of the tool ns3 Simulating the effect of queuing disciplines on network performance - Random Early Detection/Weighted RED / Adaptive RED (This can be used as a lead up to DiffServ / IntServ later).

INDUSTRIAL TRAINING-II (BVMC311P)

OBJECTIVE:

The student has to undergo six to eight weeks training in-house/ industry/ Skill Knowledge Provider (SKP)/ Sector Skill Council (SSC) during summer vacation and should submit training report for evaluation during the third semester.

The students will submit a comprehensive training report (in a presentable manner, preferably typed and bound) and give a power point presentation for evaluation by the teacher guide, and an external examiner/ expert from the industry.

The industry for training should be related to Telecom, Mobile Communication, Mobile Application development, Mobile Instruments, Telephone Exchange or any other telecom related field.

SEMESTER IV
MICROPROCESSORS AND MICROCONTROLLERS (BVMC401)

OBJECTIVE:

Objectives: To get an overview of microprocessors and microcontrollers.

Pre-requisites: Students should be well aware of digital devices like logic gates, counters and registers etc.

Learning Outcomes: Able to program 8085 and 8051 for basic applications.

UNIT-I

Microcomputer Organization: Input/ Output Devices. Data storage (idea of RAM and ROM). Computer memory. Memory organization & addressing. Memory Interfacing. Memory Map.

8085 Microprocessor Architecture: Main features of 8085. Block diagram. Pin-out diagram of 8085. Data and address buses. Registers. ALU. Stack memory. Program counter.

UNIT-II

Programming: Instruction classification, Instructions set (Data transfer including stacks. Arithmetic, logical, branch, and control instructions). Subroutines, delay loops. Timing & Control circuitry. Timing states. Instruction cycle, Timing diagram of MOV and MVI. Hardware and software interrupts.

UNIT-III

Microcontroller: Introduction and block diagram of 8051 microcontroller, architecture of 8051, overview of 8051 family, Program Counter and ROM memory map, Data types and directives, Flag bits and Program Status Word (PSW) register, Jump, loop and call instructions.

I/O port programming: Introduction of I/O port programming, pin out diagram of 8051 microcontroller, I/O port pins description & their functions, I/O port programming in 8051 (using assembly language), I/O programming: Bit manipulation.

UNIT-IV

Programming: addressing modes and accessing memory locations using various addressing modes, assembly language instructions using each addressing mode, arithmetic and logic instructions, 8051 programming in C: for time delay & I/O operations.

Text Book(s):

1. Ramesh Gaonkar, "MicroProcessor Architecture, Programming and Applications with the 8085", PHI
2. Douglas V Hall, "Microprocessors and Interfacing, Programming and Hardware" Tata McGraw Hill, 2006.
3. Muhammad Ali Mazidi, "Microprocessors and Microcontrollers", Pearson, 2006

References Books:

1. Muhammad Ali Mazidi, Janice Gillispie Mazidi, Rolin D. MCKinlay "The 8051 Microcontroller and Embedded Systems Using Assembly and C", 2nd Edition, Pearson Education 2008.
2. Kenneth J. Ayala, "The 8086 Microprocessor: Programming & Interfacing The PC", Delmar Publishers, 2007.
3. A K Ray, K M Bhurchandi, "Advanced Microprocessors and Peripherals", Tata McGraw Hill, 2007.
4. 8051 microcontrollers, Satish Shah, 2010, Oxford University Press.

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MOBILE COMPUTING (BVMC402)

OBJECTIVE:

Should have studied papers such as Communication systems, Data communications and networking and wireless networks. To learn the basic concepts, aware of the GSM, SMS, GPRS Architecture. To have an exposure about wireless protocols – WAP, Zig Bee issues. To Know the Network, Transport Functionalities of Mobile communication. To understand the concepts of Adhoc and wireless sensor networks. Introduce Mobile Application Development environment.

UNIT-I

Mobile Physical Layer: Review of generation of mobile services, overview of wireless telephony, cellular concept, GSM: air-interface, channel structure, location management: HLR-VLR, hierarchical, handoffs, channel allocation in cellular systems, CDMA, GPRS.

Mobile Computing Architecture: Issues in mobile computing, three tier architecture for mobile computing, design considerations. WAP: Architecture, protocol stack, Data gram protocol, application environment, and applications.

UNIT-II

Mobile Data Link Layer: Motivation for a specialized MAC, Near & far terminals, Multiple access techniques for wireless LANs such as collision avoidance, polling, inhibit sense, spread spectrum, CDMA. Local Area Wireless systems: ZigBee, RFID and Wi-Max.

UNIT-III

MOBILE IP Network Layer: IP and Mobile IP Network Layer- Packet delivery and Handover Management-Location Management- Registration- Tunnelling and Encapsulation-Route Optimization- Dynamic Host Configuration Protocol, Ad Hoc networks, localization, MAC issues, Routing protocols, global state routing (GSR), Destination sequenced distance vector routing (DSDV), Dynamic source routing (DSR), Ad Hoc on demand distance vector routing (AODV), VoIP –IPSec.

Mobile Transport Layer: Transport Layer Protocols-Indirect, Snooping, Mobile TCP.

UNIT-IV

Support for Mobility: Data bases, data hoarding, Data dissemination, UA Prof and Caching, Service discovery, Data management issues, data replication for mobile computers, adaptive clustering for mobile wireless networks, Mobile devices and File systems, Data Synchronization, Sync ML.

Introduction to Wireless Devices and Operating systems: Windows CE, Android, Mobile Agents. Introduction to Mobile application languages and tool kits.

Text Book(s):

1. J. Schiller, "Mobile Communications", 2nd edition, Pearson, 2011.
2. Raj Kamal "Mobile Computing" Oxford Higher Education, Second Edition, 2012.
3. Dharam prakash Agrawal and Qing-An Zeng, "Introduction to Wireless and Mobile Systems" 3rd edition,Cengage learning 2013.

Reference Book(s):

1. Asoke K Talukder, Hasan Ahmed,Roopa R Yavagal "Mobile Computing", Tata McGraw Hill Pub ,Aug – 2010
2. Pei Zheng, Larry L. Peterson, Bruce S. Davie, Adrian Farrell "Wireless Networking Complete" Morgan Kaufmann Series in Networking , 2009 (introduction, WLAN MAC)
3. Vijay K Garg "Wireless Communications & Networking" Morgan Kaufmann Series, 2010
4. M. V. D. Heijden, M. Taylor, Understanding WAP, Artech House.
5. Charles Perkins, Mobile IP, Addison Wesley.
6. Charles Perkins, Ad hoc Networks, Addison Wesley.
7. Uwe Hansmann, Lothar Merk, Martin S. Nicklous, Thomas Stober, "Principles of Mobile Computing", Springer.
8. Evaggelia Pitoura and George Samarus, "Data Management for Mobile Computing", Kluwer Academic Press, 1998

ANTENNA THEORY AND WAVE PROPAGATION (BVMC403)

OBJECTIVE:

To study the antenna fundamentals, various types of antennas and wave propagation.

UNIT –I

Introduction of Antenna: Radiation mechanism, single wire, two wire, dipole, current distribution of thin wire antenna.

Fundamental parameters of Antenna: radiation pattern, isotropic, directional and Omni directional pattern, principal patterns, radiation patterns lobes, field regions, radian and steradian, Radiation power density, radiation intensity, directivity, gain, antenna efficiency, half power beam width, beam efficiency, bandwidth efficiency, input impedance, antenna radiation efficiency, antenna aperture, effective height.

UNIT-II

Vector potential for an electric and magnetic current source, electric and magnetic fields for electric and magnetic current source, far field radiation, Duality theorem, reciprocity theorem.

Linear wire Antenna: infinitesimal dipole, radiation field (with derivation), directivity, near field, intermediate field, far field ,power density, small/short dipole, half wavelength dipole. folded dipole.

Antenna Array: Two element arrays, N-element linear array, broadside array, ordinary end fire array, phased array.

UNIT-III

Types of Antenna: Introduction.

Travelling wave Antenna: Long wire, V antenna, Rhombic antenna. **Broadband Antenna:** Helical antenna, Yagi-Uda antenna. **Frequency independent Antenna:** Log periodic antenna.

Introduction of Micro strip patch antenna (MPA), basic characteristics, feeding method, micro strip rectangular patch antenna and its design using transmission line model, smart antennas.

UNIT-IV

Wave propagation: Ground wave, sky wave, space wave, ionosphere, reflection and refraction by ionosphere, critical frequency, virtual height, MUF (max. usable frequency), skip distance, troposphere and duct propagation.

Antenna measurements: Measurement of reflection coefficient and radiation pattern, Introduction of Anechoic chamber and Vector Network Analyzer.

Text Book(s)

1. Edward Conrad Jordan, Keith George Balmain, Electromagnetic waves and radiating systems, Prentice Hall,1968
2. J.D. Kraus, RJ. Marhefka and Ahmad S. Khan, "Antennas and Wave Propagation" Tata McGraw Hill Publications, New Delhi, 4th ed., (Special Indian Edition), 2010.
3. Constantine A. Balanis, " Antenna Theory Analysis and Design", 3rd Edition, Wiley Publications.

Reference Book(s)

1. S. Das and A. Das, "Antennas and Wave Propagation", Tata McGraw Hill publications.
2. A.R. Harish and M. Sachidananda, "Antenna and wave Propagation", Oxford Publications.
3. G.S.N. Raju, Antenna Wave Propagation, Pearson Education, 2004

CORE ELECTIVE-I
(SELECT ANY ONE)
OPERATING SYSTEM CONCEPTS
(BVMC404A)

OBJECTIVE:

The goal of this course is to provide an introduction to the internal operation of modern operating systems. The course will cover processes and threads, mutual exclusion, CPU scheduling, deadlock, memory management, file systems and shell programming.

UNIT-I

Introduction: What is an Operating System, Simple Batch Systems, Multi-programmed Batches systems, Time-Sharing Systems, Personal-computer systems, Parallel systems, Distributed Systems, Real-Time Systems, OS – A Resource Manager.

Memory Management: Memory Organization, Memory Hierarchy, Mapping address space to memory space, memory allocation strategies, fixed partition, variable partition, paging, virtual memory.

UNIT-II

Processes: Introduction, Process states, process management, Interrupts, Inter-process Communication.

Threads: Introduction, Thread states, Thread Operation, Threading Models.

Processor Scheduling: Scheduling Mechanisms, Strategy selection, non-pre-emptive and pre-emptive strategies.

Process Synchronization: Mutual exclusion, software solution to Mutual exclusion problem, hardware solution to Mutual exclusion problem, semaphores.

UNIT-III

Device Management: Disk Scheduling Strategies, Rotational Optimization, System Consideration, Caching, Buffering and spooling.

File System: Introduction, File Organization, Logical File System, Physical File System, File Allocation strategy, Free Space Management, File Access Control, Data Access Techniques, Data Integrity Protection, Case study on file system viz. FAT32, NTFS.

UNIT-IV

Shell Introduction and Shell Scripting: What is shell and various type of shell, Various editors present in Linux, Different modes of operation in vi editor, What is shell script, Writing and executing the shell script, Shell variable (user defined and system variables), System calls, Using system calls, Decision making in Shell Scripts (If else, switch), Loops in shell.

Text Book(s):

1. Deitel & Dietel, "Operating System", Pearson, 3rd Ed., 2011
2. Silbersachatz and Galvin, "Operating System Concepts", Pearson, 5th Ed., 2001

Reference Book(s):

1. Tannenbaum, "Operating Systems", PHI, 4th Edition, 2000
2. Godbole, "Operating Systems", Tata McGraw Hill, 3rd edition, 2014
3. Chauhan, "Principles of Operating Systems", Oxford Uni. Press, 2014
4. Dhamdhere, "Operating Systems", Tata McGraw Hill, 3rd edition, 2012

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INTRODUCTION TO OPEN SOURCE SOFTWARE (BVMC404B)

OBJECTIVE:

The objective of the paper is to make the students familiar with the Open Source software. This course focuses on the various common and mostly used free software and languages.

By the end of this course the students shall be able to understand OSS, use and operate free operating systems, learn programming in Python.

UNIT-I

Introduction: The philosophy of OSS, Applications, usage, FLOSS vs FOSS, commercial software vs OSS, free software vs freeware. Open source development models. Examples of open source projects and software, selecting the right OSS software, OSS Web Design Template, Pros and cons of Open Source Solutions.

History: Free Software Movement, BSD, The Free Software Foundation and the GNU Project, Commercial aspects of Open Source movement. Certification courses issues - global and Indian.

UNIT-II

Community Building: Importance of Communities in Open Source Movement. JBoss Community. Developing blog, group, forum, social network for social purpose.

UNIT-III

Open Source Operating Systems: LINUX: Introduction, General Overview, Kernel mode and User mode process. The Shell Basic Commands, Shell Programming: Shell Variables, Branching Control, Structures, Loop-Control Structure, Continue and break Statements, Sleep Command, Debugging Script.

Linux Advanced Concepts: Scheduling, Time Accounting, Personalities, Cloning and Backup your Linux System, Linux Signals, Development with Linux.

Linux Networking: Configuration Files, Red Hat Linux network GUI configuration tools, assigning an IP address, Subnets, Route, Tunneling, Useful Linux network commands, Enable Forwarding.

UNIT-IV

Basic features of Python: Overview, Installing, Running in windows/Linux.

Variables and Strings: Data types, Operators, Decision Control, Conditional Statements, Loops, Example Programs.

Sequences: Lists: Introduction, Fixed size lists and arrays, Lists and Loops, Assignment and references, Identity and equality, Sorted lists, Tuples: Tuples and string formatting, String functions. Sets: Unordered Collections, Simple programs Dictionaries, File Handling, Exception, Handling exception. Dictionaries: Introduction, combining two dictionaries with UPDATE, Making copies, Persistent variables, Internal dictionaries.

Functions and Files: Functions, File Handling, Exception, Handling Exception. Python v2.7 vs Python v3.x.

Text Books:

1. Neil Matthew and Richard Stones "Beginning Linux Programming, 4th Ed", John Wiley & Sons.
2. How to Think Like a Computer Scientist: Learning with Python, Allen Downey, Jeffrey Elkner, Chris Meyers, Dreamtech Press, 2015

Reference Books:

1. https://tavaana.org/sites/default/files/introduction_to_opensource.pdf
2. The Linux Kernel Book, Rem Card, Eric Dumas and Frank Mevel, Wiley Publications sons, 2003
3. Learning to Program Using Python, by Cody Jackson (e-book)
4. http://www.gov.pe.ca/photos/original/IPEI_ebiz_oss.pdf
5. http://www.providersedge.com/docs/km_articles/An_Introduction_to_Online_Communities.pdf
6. http://www.ijcim.th.org/past_editions/2005V13N1/IJCIM-V131-pp7.pdf
7. JBoss Application Server Official Documentation webpage.
8. Introduction To Computation And Programming Using Python, John V Guttag, PHI (2014).

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OPEN ELECTIVE-IV
(SELECT ANY ONE)
GLOBAL WARMING & CLIMATE CHANGE
(BVMC405A)

OBJECTIVES AND PRE-REQUISITES:

To study concepts of global warming & climatic change. To study factors responsible for global warming, impact of climatic change, national and international policies. To study and understand Kyoto mechanism. Basic knowledge of environmental studies subject is a pre requisite.

Learning outcomes: Understanding of philosophy of global warming and climatic change. Able to realize the factors responsible for global warming and corresponding climatic change. Understanding the importance and nuances of Kyoto mechanism.

UNIT-I

The Climate system: Sun, Atmosphere, Ocean, Ice and energy balance of the earth, history of climate change, human-caused climate change, impacts of climate change on human well-being and the natural world.

UNIT-II

Key concepts of global warming, climate change, greenhouse gas effect, Interrelationship between these three phenomenon, Green-House Effect as a Natural Phenomenon and increase in Greenhouse gas effect because of anthropogenic activities, Green House Gases (GHGs) and their Emission Sources, Global Warming Potential (GWP) of GHGs, Past Present and Future trends of global warming.

UNIT-III

Impacts of climate change Extreme weather events, Temperature Rise, Sea Level rise, Coastal Erosion and landslides; future impacts of global warming, global warming and the hydrological cycle, climate change impact on ecosystems and agriculture.

UNIT-IV

Possible remedies of global warming- various mitigation and adaptation measures taken/ proposed to combat global warming; National and International policies to combat global warming and climate change-UNFCC- Kyoto Protocol, Paris agreement its role in Climate Change; IPCC- its role in global climate protection Role of countries and citizens in containing Global Warming.

Text Books

1. Current trends in Global Environment by A.L. Bhatia (2005) Energy Sources
2. Global Warming – A Very Short Introduction, Mark Maslin, oxford.
3. UNFCC & IPCC reports (www.unfccc.int & http://www.ipcc.ch/)

Reference Books

1. Global Warming The Complete Briefing - John T Houghton Cambridge press
2. Climate Change: A Multidisciplinary Approach, by William James Burroughs, Cambridge press
3. Contemporary climatology-Robinson, Taylor and Francis group

ENTREPRENEURSHIP DEVELOPMENT AND PLANNING
(BVMC405B)

OBJECTIVE:

The Course Aims at Instituting Entrepreneurship Skills in the Students by giving an overview of the process of entrepreneurship. The Course aims at inculcating entrepreneurial spirit among the students.

UNIT-I

Foundations of Entrepreneurship: What is an Entrepreneur? The benefits of Entrepreneurship. The power of small business. Class exercise- case discussion on entrepreneurs like - Dhirubhai Ambani, Karsenbhai Patel, Ramesh Babu, Kailash Katkar, Patricia Narayan etc.

UNIT-II

Launching Entrepreneurial Ventures: Creativity and innovation. Methods to initiate ventures. Legal challenges in Entrepreneurship ventures. The search for Entrepreneurial capital. Class exercise- Survey your locality and come up with at least one entrepreneurial venture. Discuss in class about ways to enhance the business in most innovative manner.

UNIT-III

Formulation of the Entrepreneurial Plan: The assessment functions with opportunities. The marketing Aspects of new ventures. Business plan preparation for new ventures. Class Exercise- Building your own Business Plan.

UNIT-IV

Institutions Supporting Small Business Enterprises: Central level institutions. State level institutions. Other agencies. Industry Associations. Class exercise- discussions on current government schemes supporting entrepreneurship and finding out which scheme will most suit the business plan devised by the student.

Text Books:

1. Kuratko, D.F. & Rao T.V. (2012). Entrepreneurship: A South Asian Perspective. Cengage
2. Charantimath, P. (2009). Entrepreneurship Development: Small Business Enterprises. Pearson

References Books:

1. Naggendra S.and Manjunath V.S. (2009). Entrepreneurship and Management. Pearson

BUSINESS INFORMATICS
(BVMC405C)

OBJECTIVES AND PRE-REQUISITES:

The objective of this paper is to provide understanding of business processes and managing these processes through improved information management and better use of business intelligence systems

Learning Outcomes: After this course the student is expected to understand how the information in the organizations can be handled effectively using various information types of information systems

UNIT-I

Foundations of Information Systems in Business: Data, Information and Knowledge, Information system and its components, Uses of IS in Business, Types of Information systems, Using Information Systems for competitive advantage, Porter's competitive forces model

UNIT-II

Functional Business Systems: Overview of system analysis and design; Role of Information systems in marketing, Human Resource Management, Accounting and Finance, manufacturing.

UNIT-III

Enterprise Business Systems: Customer Relationship Management -Benefits and Challenges of CRM, Trends in CRM; Supply Chain Management-Benefits and Challenges of SCM, Trends in SCM; Enterprise Resource Planning-Benefits and Challenges of ERP, Causes of ERP failures, Trends in ERP;e-Commerce-Categories of e- commerce, Essential e-Commerce processes, Electronic payment processes

UNIT-IV

Decision Support in Business: Management Information Systems, Decision Support Systems, Online Analytical Processing, Executive Information Systems, Knowledge Management Systems, Expert Systems

Text Book(s):

1. James A O'Brien, George M Marakas and Ramesh Behl (2013). Management Information Systems, Tenth Edition, Tata McGraw Hill Education, New Delhi.
2. Ken Laudon and Jane Laudon (2014). Management Information Systems, Twelft Edition, Pearson, New Delhi.

Reference Book(s):

1. D.P.Goyal (2014). Management Information Systems-Managerial Perspectives, Fourth Edition, Vikas Publishing House, New Delhi.
2. Waman S Jawadekar(2009). Management Information Systems. Fourth Edition, Tata McGraw Hill, New Delhi

PRACTICAL/VIVA VOCE
(SELECT ANY ONE LAB BASED ON THEORY)
OPERATING SYSTEM CONCEPTS LAB
(BVMC406A(P))

LIST OF EXPERIMENTS:

Following exercises can be performed using Linux or Unix.

1. Study of hardware and software requirements of different operating systems (UNIX, LINUX, WINDOWS XP, WINDOWS 7/8).
2. Usage of following commands: ls, pwd, tty, cat, who, who am I, rm, mkdir, rmdir, touch, cd.
3. Usage of following commands: cal, cat(append), cat(concatenate), mv, cp, man, date.
4. Usage of following commands: chmod, grep, tput (clear, highlight), bc.
5. Write a shell script to check if the number entered at the command line is prime or not.
6. Write a shell script to modify "cal" command to display calendars of the specified months.
7. Write a shell script to modify "cal" command to display calendars of the specified range of months.
8. Write a shell script to accept a login name. If not a valid login name display message – "Entered login name is invalid".
9. Write a shell script to display date in the mm/dd/yy format.
10. Write a shell script to display on the screen sorted output of "who" command along with the total number of users.
11. Write a shell script to display the multiplication table any number.
12. Write a shell script to compare two files and if found equal asks the user to delete the duplicate file.

13. Write a shell script to find the sum of digits of a given number.
14. Write a shell script to merge the contents of three files, sort the contents and then display them page by page.
15. Write a shell script to find the LCD (least common divisor) of two numbers.
16. Write a shell script to perform the tasks of basic calculator.
17. Write a shell script to find the power of a given number.
18. Write a shell script to find the factorial of a given number.
19. Write a shell script to check whether the number is Armstrong or not.
20. Write a shell script to check whether the file have all the permissions or not.
21. Program to show the pyramid of special character "*".

INTRODUCTION TO OPEN SOURCE SOFTWARE LAB (BVMC406B(P))

LIST OF EXPERIMENTS:

Part A
1. Installation of Linux, and Customization of Linux.
2. To Study basic & User status UNIX/ Linux Commands.
3. To Study & use commands for performing arithmetic operations with Unix/Linux.
4. Creating a Text file in Linux. Writing and appending in that file.
5. Study & use of the Command for changing file permissions.
6. Execute shell commands through vi editor.
7. To use control statements in shell programming.
8. To assign and use IP addresses in Linux.

Part B
9. Installation of python and its related libraries.
10. **write programs in python which:**
    a. Obtain program user input for integer, floating point and string variables.
    b. Carry out different actions using if, elif and else blocks.
    c. Test, compare and operate on numbers and strings.
    d. Combine tests using Boolean operators: and, or and not.
    e. Read and write simple number and string objects from and to text files.
    f. Combine any of the above operations.
11. Write and execute a program in python involving the use of tuples and lists to assign and hold multiple values.
12. Write and execute a program in python involving the use of slices to obtain parts of lists and to manipulate lists.
13. Write and execute a program in python involving the use of range() to generate lists containing sequences of integers.
14. Write and execute a program in python involving the use of for loops to iterate through predefined lists of objects.
15. Write and execute a program in python involving the use of try-except statements for exception handling.
16. Write and execute a program in python for creating a GUI dialog box which can store the user information in a text file.

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PRACTICAL/VIVA VOCE MICROPROCESSORS & MICROCONTROLLERS LAB (BVMC407P)

LIST OF EXPERIMENTS:

At least 05 experiments each from Section-A and Section-B

Section-A: Programs using 8085 Microprocessor

1. Addition and subtraction of numbers using direct addressing mode
2. Addition and subtraction of numbers using indirect addressing mode
3. Multiplication by repeated addition.
4. Division by repeated subtraction.
5. Handling of 16-bit Numbers.
6. Use of CALL and RETURN Instruction.
7. Block data handling.
8. Other programs (e.g. Parity Check, using interrupts, etc.).

Section-B: Experiments using 8051 microcontroller:

1. To find that the given numbers is prime or not.
2. To find the factorial of a number.
3. Write a program to make the two numbers equal by increasing the smallest number and decreasing the largest number.
4. Use one of the four ports of 8051 for O/P interfaced to eight LED's. Simulate binary counter (8 bit) on LED's.
5. Program to glow the first four LEDs then next four using TIMER application.
6. Program to rotate the contents of the accumulator first right and then left.
7. Program to run a countdown from 9-0 in the seven segment LED display.
8. To interface seven segment LED display with 8051 microcontroller and display 'HELP' in the seven segment LED display.
9. To toggle '1234' as '1324' in the seven segment LED display.
10. Interface stepper motor with 8051 and write a program to move the motor through a given angle in clock wise or counter clockwise direction.

MOBILE COMPUTING LAB (BVMC408P)

LIST OF EXPERIMENTS:

The student is advised to learn any of the following languages and use any one tool kit for generating mobile applications, such as game, Clock, calendar, Convertor, phone book, Text Editor etc.,

Language support: XHTML-MP, WML, WML Script.

Mobile application languages- XML, Voice XML, Java, J2ME, Java Card

Tool Kits: WAP Developer tool kit and application environment, Android Mobile Applications Development Tool kit.

For MANETS, use of NS2/NS3 is recommended for two experiments.

INDUSTRIAL TRAINING-III (BVMC409P) PROJECT-II (BVMC410P)

The student has to submit a synopsis at the beginning of the semester for approval from the departmental committee in a specified format, thereafter he/she will have to present the progress of the work through seminars and progress reports.

Project means, for solving live problems faced by telecom industries, or developing an application or hardware prototype, by applying the knowledge and skills obtained through the vocational course in the relevant field.

The students will submit a project report in a presentable manner (printed copy) and give a power point presentation for evaluation by the teacher guide, and an external examiner/ expert from the industry.

SEMESTER V
TECHNICAL ENGLISH
(BVMC501)

OBJECTIVE:

- To equip students to recognize, explain, and use the rhetorical strategies and the formal elements of specific genres of technical communication, such as technical abstracts, data based research reports, instructional manuals, technical descriptions etc.
- To help students understand the process of collection, analysis, documentation, and reporting of research clearly, concisely, logically, and ethically and understand the standards for legitimate interpretations of research data within scientific and technical communities.
- To initiate students into critical and creative thinking, innovation, inquiry, and analysis, evaluation and synthesis of information towards meaningful and effective communication
- To help students understand ethical considerations in technical and professional writing, realizing the consequences of various communication acts.

Learning Outcomes: Upon successful completion of the course the student shall be able to:

- Understand and demonstrate composing processes through invention, organization, drafting, revision, editing, and presentation as evidenced in satisfactory completion of all the written, visual, web-based, and oral discourses to be submitted in this course.
- To recognize and use the rhetorical and stylistic elements necessary for the successful practice of scientific and technical communication;
- Create various products most frequently used in scientific and technical communication.
- Develop ethical problem-solving communication skills in professional situations.

UNIT-I

Technical Writing: Definition, Purpose and Characteristics of Technical Writing.

Technical Writing Skills: Methods and means of the Pre-writing stage, the Writing Stage and the Post-writing Stage.

UNIT-II

Formal Formatting: Arrangement of Formal Elements, Front Material, Format Devices in the Body of Formal Report-Heading, Pagination, End Material – Citations, References and Bibliography, Appendix.

UNIT-III

Writing and Designing for Electronic Media: Use of Internet as a Writing tool; designing and writing for multimedia applications and the World Wide Web.

UNIT-IV

Research and Writing Ethics: Explaining Forms and Consequences of Plagiarism, Introduction to Intellectual Property Right and Copy Right Laws.

Text Book(s):

1. Sides, Charles H., "How to Write and Present Technical Information", Cambridge Univ. Press, 1999.
2. Basu, B. N., "Technical Writing", PHI Learning Pvt. Ltd., 2007.

Reference Book(s):

1. Beer, David F. and David A. McMurrey, "A Guide to Writing as an Engineer", New York: Wiley, 2005.

2. Gibaldi, Joseph, and Walter S. Achtert, "MLA Handbook for Writers of Research Papers, Thesis, and Dissertations", Modern Language Association, 1980.

3. Rubens, Philip, "Science and Technical Writing: A Manual of Style", Routledge, 2002.

4. Anderson, Marilyn, Pramod K. Nayar, and Madhucchandra Sen, "Critical Thinking, Academic Writing and Presentation Skills", Pearson. 2010.

WIRELESS COMMUNICATION (BVMC502)

OBJECTIVE:

The objective of the course is to introduce various wireless networks, mobile networks and their basic architecture starting from 2G through to 3G and 4G.

UNIT-I

Introduction To Wireless Communication Systems: Evolution of mobile radio communications; examples of wireless comm. systems; overview of generations of cellular systems, comparison of various wireless systems. **Introduction to Personal Communication Services (PCS):** PCS architecture, Mobility management, Networks signaling. A basic cellular system, multiple access techniques: FDMA, TDMA, CDMA.

Introduction to Wireless Channels and Diversity: Fast Fading Wireless Channel Modeling, Rayleigh/Ricean Fading Channels, BER Performance in Fading Channels, Introduction to Diversity modeling for Wireless Communications.

Tele-traffic engineering basics: Traffic, traffic units, routing, grade of service. Loss Systems, Delay systems, queuing systems.

UNIT-II

2G Networks: Second generation, digital, wireless systems: GSM, IS-95 CDMA. Global system for Mobile Communication (GSM) system overview: GSM Architecture, Mobility Management, Network signaling, mobile management, voice signal processing and coding. **Spread Spectrum Systems-** Cellular code Division Access Systems-Principle, Power Control, effects of multipath propagation on code division multiple access.

UNIT-III

G Mobile Data Networks: Introduction to Mobile Data Networks, General Packet Radio Services (GPRS): GPRS architecture, GPRS Network nodes, EDGE,Wireless LANs, (IEEE 802.11), Mobile IP.

Third Generation (3G) Mobile Services: Introduction to International Mobile Telecommunications 2000 (IMT 2000) vision, Wideband Code Division Multiple Access (W-CDMA), and CDMA 2000, Quality of services in 3G and 4G, Introduction to 5G.

UNIT-IV

Wireless personal area networks (WPAN): Blue tooth, IEEE 802.15, architecture, protocol stack.
Wi-Max, introduction to Mobile Adhoc Networks.Broadband access Networks, Intelligent Networks, Next Generation Networks (NGN), Physical and Virtual Networks, Number Portability, Corporate Networks.

Text Books:

1. Raj Pandya, "Mobile & Personnel Communication Systems and Services", Prentice Hall India, 2001.
2. Theodore S. Rappaport, "Wireless Communication- Principles and Practices", Pearson Education Pvt. Ltd, 5th Edition, 2008.
3. Theodore S. Rappaport, Wireless Communication, Prentice hall.

Reference Books:

1. T. L. Singhal "Wireless Communication", Tata McGraw Hill Publication.
2. Jochen Schiller, "Mobile communications", Pearson Education Pvt. Ltd., 2002.
3. YiBing Lin & Imrich Chlamatac, "Wireless and Mobile Networks Architecture," John Wiley, 2001
4. Lee, W.C.Y., "Mobile Cellular Telecommunication", 2nd Edition, McGraw Hill,1998.
5. Smith & Collins, "3G Wireless Networks," TMH, 2007

6. Schiller, Jochen, "Mobile Communications", 2nd Edition, Addison Wesley
7. Vijay Garg & Elsevier, "Wireless Communications and Networking",
8. Kamilo Feher, "Wireless Digital Communication", PHI
9. William C. Y. Lee, "Mobile Communications Engineering", Tata Mc-Graw Hill Publications
10. C. K. Toh, "Adhoc Mobile Wireless Network", Pearson.

CORE ELECTIVE-II (SELECT ANY ONE) SIGNALS AND SYSTEMS (BVMC503A)

OBJECTIVE:

This is the first course for representation of various types of electronic signals and LTI systems. Applications of Fourier series, understanding of Fourier transforms and sampling of various signals. Analysis of various systems using the Z transforms, Laplace transforms.

UNIT-I

Continuous And Discrete Time Signals: Definition of signal, Classification of Signals: Periodic and Aperiodic, Even and Odd, Energy and Power signals, Deterministic and Random signals.

Singular Functions: Unit impulse, unit step, unit ramp, complex and exponential, parabolic, Signum, Sincetc. Properties of unit impulse in continuous and discrete domain, properties of basic functions w. r. t. orthogonality. Transformation in independent variable of signals: Time scaling, Time shifting, Amplitude scaling. Representation of signals in terms of singular function and orthogonal functions.

Systems: Definition of system, types of systems: Linear and nonlinear, static and dynamic, causal and non- causal, time variant and invariant, invertible and non-invertible, stable and non-stable. System described by differential equation and difference equation.

LTI System: Properties of LTI System, impulse response, convolution and its properties in continuous and discrete domain with proof. Linear convolution in continuous and discrete domain using graphical method, using general formula and matrix method.

UNIT-II

Fourier series: Need and application of Fourier series. Fourier series representation of continuous time and discrete time signals using exponential method and trigonometric method. Magnitude and Phase spectrum of signals.

Fourier Transform: Properties of the Continuous time and discrete time Fourier Transform. Magnitude and Phase representations of frequency response of LTI systems Analysis and characterization of LTI systems using Differential Equations and Difference equation.

UNIT-III

Magnitude- Phase Representation of Frequency Response of LTI System: Linear phase, concept of phase delay and group delay. All pass system.

Laplace Transform: Properties of Laplace transform, concept of ROC and its properties. Computation of impulse response & transfer function using Laplace transform. Inverse-Laplace transforms. Computation of impulse response, total response (zero state and zero input response) & transfer function using Laplace transform.

UNIT-IV

Sampling: Sampling of low pass signals, ideal sampling, Aliasing effect, Nyquist rate, reconstruction of signal. Sampling of discrete time signals.

Z Transform: Region of convergence – properties of ROC, Properties of Z-transform.

Inverse Z-transform using contour integration- Residue theorem, Power series expansion and partial fraction expansion. Relationship between Z-transform, Fourier transform and Laplace transform. Computation of impulse response, total response (Zero state and Zero input response) & Transfer function using Z-Transform. Stability of discrete-time LTI System.

Text Book(s):

1. Alan V. Oppenheim, Alan S. Willsky, S. Hamid Nawab, "Signals & Systems", 2nd Edition, Pearson Education, 2007
2. Simon Haykin and Barry Van Veen, "Signals and Systems", John Wiley, 2004.

Reference Book(s):

1. M. J. Roberts, "Signals and Systems Analysis using Transform Method and MATLAB", TMH 2003.
2. Tarun Kumar Rawat "Signals and Systems ", Oxford University Press
3. A. Anand Kumar, "Signals and Systems" 3rd Edition, PHI
4. Ramesh Babu and R. Anandanatrajan, "Signals and System", 4th Edition Sci Tech, 2013
5. Moman H. Hays, "Digital Signal Processing", Schaum"s outlines, Tata McGraw-Hill2004.
6. John G. Proakis and Dimitris G. Manolakis, "Digital Signal Processing, Principles, Algorithms and Applications", 3rd Edition. PHI.
7. C. Alexander and M. Sadiku, "Fundamentals of Electric Circuits", McGraw Hill (2008)
8. H. P. Hsu, "Signals and Systems", Tata McGraw Hill
9. S. T. Karris, "Signal and Systems: with MATLAB Computing and Simulink Modelling", Orchard Publications
10. W. Y. Young, "Signals and Systems with MATLAB", Springer

MOBILE APPLICATION DEVELOPMENT (BVMC503B)

OBJECTIVE:

Should have studied papers such as Communication systems, Data communications and networking and wireless networks. To understand the concepts of mobile operating systems and application development. Introduce Mobile Application Development environment.

UNIT-I

Introduction: What is mobile Application Programming, Different Platforms, Architecture and working of Android, iOS and Windows phone 8operating system, Comparison of Android, iOS and Windows phone 8 Android Development Environment: What is Android, Advantages and Future of Android, Tools and about Android SDK, Installing Java, Eclipse, and Android, Android Software Development Kit for Eclipse, Android Development Tool: Android Tools for Eclipse, AVDs: Smartphone Emulators, Image Editing.

UNIT-II

Android Software Development Platform: Understanding Java SE and the Dalvik Virtual Machine, Directory Structure of an Android Project, Common Default Resources Folders, The Values Folder, Leveraging Android

XML, Screen Sizes, Launching Your Application: The AndroidManifest.xml File, Creating Your First Android Application.

Android Framework Overview: The Foundation of OOP, The APK File, Android Application Components, Android Activities: Defining the User Interface, Android Services: Processing in the Background, Broadcast Receivers: Announcements and Notifications, Content Providers: Data Management, Android Intent Objects:

Messaging for Components, Android Manifest XML: Declaring Your Components.

UNIT-III

Views and Layouts, Buttons, Menus, and Dialogs, Graphics Resources in Android: Introducing the Drawables, Implementing Images, Core Drawable Subclasses, Using Bitmap, PNG, JPEG and GIF Images in Android, Creating Animation in Android.

Handling User Interface(UI) Events: An Overview of UI Events in Android, Listening for and Handling Events, Handling UI Events via the View Class, Event Callback Methods, Handling Click Events, Touchscreen Events, Keyboard Events, Context Menus, Controlling the Focus. Content Providers: An Overview of Android

Content Providers, Defining a Content Provider, Working with a Database. Intents and Intent Filters: Intent, Implicit Intents and Explicit Intents, Intents with Activities, Intents with Broadcast Receivers.

UNIT-IV

Advanced Android: New Features in Android 4.4. iOS Development Environment: Overview of iOS, iOS Layers, Introduction to iOS application development. Windows phone Environment: Overview of windows phone and its platform, Building windows phone application.

Text Books:

1. Onur, Cinar: "Beginning Android 4", Apress Publication.
2. Reto Meier, "Professional Android 4 Application Development", Wrox Publication
3. István Novák, Zoltan Arvai, György Balássy and David Fulop, "Beginning Windows 8 Application Development", Wiley Publication.

Reference Books:

1. Allen Sanders and Kevin Ashley, "Programming: Application Development with C# and XML", Wrox Publication
2. Thomas M. Duffy, "Programming with Mobile Applications: Android, iOS and Windows Phone 7", Cengage Course Technology, Edition 2012
3. Thomas J. Duffy, "Programming with Mobile Applications 1e", Cengage Learning, @2013

CORE ELECTIVE-III (SELECT ANY ONE) WEB ENGINEERING (BVMC504A)

OBJECTIVE:

This paper gives understanding of web designing to the students.

UNIT-I

History of the Internet, Basic internet protocols, World Wide Web (W3C), HTTP: Hypertext Transfer Protocol.

Mark-up languages: XHTML: Introduction to HTML, basics of XTHML, HTML elements, HTML tags, lists, tables, frames, forms, defining XHTML‟s abstract syntax, defining HTML documents.

CSS style sheets: Introduction, CSS core syntax, text properties, CSS box model, normal flow box layout, other properties like list, tables, DHTML, XML, XML documents & vocabulary, XML versions & declarations, Introduction to WML.

UNIT-II

Client Side Programming: JAVA Scripts, basic syntax, variables & data-types, literals, functions, objects, arrays, built-in

objects, JAVA Script form programming, Intrinsic event handling, modifying element style, document trees,

Server side programming: Java Servlets: Servlet architecture, life cycle, parameter data, sessions, cookies, servlets capabilities, servlets & concurrency. Introduction to JSP, JSP Tags, JSP life cycle, custom tags.

UNIT-III

Security Threats, Security risks of a site, Web attacks and their prevention, Web security model, Session management, authentication, HTTPS and certificates, Application vulnerabilities and defenses. Client-side security, Cookies security policy, HTTP security extensions, Plugins, extensions, and web apps, Web user tracking. Server-side security tools, Web Application Firewalls (WAFs) and Fuzzers.

UNIT-IV

Introduction to Web 2.0 and Web 3.0, Concepts and Issues, Latest Trends in Web Technologies. Web Security concerns. Applications of Web Engineering Technologies in distributed systems etc. Case studies using different tools.

Text Books:

1. Jackson, "Web Technologies: A Computer Science Perspective", Pearson Education India, 2007.
2. Roger S Pressman, "Web Engineering: A Practitioner's Approach", David Lowe, TMH, 2008.

Reference Books:

1. Achyut Godbole, AtulKahate, "Web Technologies", McGraw-Hill Education, Third Edition.
2. Uttam K Roy, "Web Technologies", Oxford University Press, 2012.
3. Chris Bates, "Web Programming", Wiley
4. Gertel Keppel, Birgit Proll, Siegfried Reich, Werner R., "Web Engineering", John Wiley.
5. Berner's LEE, Godel and Turing, "Thinking on the Web", John Wiley & Sons Inc.

WEB APPLICATION AND DEVELOPMENT (BVMC504B)

OBJECTIVES AND PRE-REQUISITES:

Knowledge of basics of programming- constructs and principles is a prerequisite to this course. Programming through Java script is taught in this course to enable secure Web development.

UNIT-I

Introduction to HTML & CSS:

HTML: HTML Basics, HTML Responsive, HTML Entities, HTML Forms, HTML5 Canvas, HTML5 SVG, HTML5 Data Storage, HTML5 Audio and Video
CSS: CSS Introduction, CSS Syntax, CSS Text, CSS Backgrounds, CSS Fonts, CSS Links, CSS Lists, CSS Tables, CSS Box Model, CSS Margins, Dimensions, Display, CSS Navigation Bar, CSS Attribute Selectors, CSS Rounded Corners, CSS Border Images, CSS Backgrounds, CSS Colors, CSS Animations

UNIT-II

Introduction to JavaScript and JQuery
Introduction to JavaScript: JavaScript Introduction, JavaScript Output, JavaScript Variables, JavaScript Operators, JavaScript Arithmetic, JavaScript DataTypes, JavaScript Assignment, JavaScript Functions, JavaScript Objects, JavaScript Scope, JavaScript Events, JavaScript Strings and String Methods, JavaScript Numbers and Number Methods, JavaScript Math, JavaScript Dates: Formats and Methods, JavaScript Booleans,JavaScript Comparisons, JavaScript Conditions, JavaScript Switch, JavaScript Loops, JavaScript Break, JavaScript Type, JavaScript Forms (API and Validation), JavaScript Objects, JavaScript Functions, JavaScript DOM, JavaScript Browser BOM, JavaScript Frameworks

Introduction to JQuery: JQuery Introduction, JQuery Syntax, JQuery Selectors, JQuery Events, JQuery Effects- JQuery Hide/ Show, JQuery Fade, JQuery Slide(), JQuery Animate, JQuery Stop(), JQuery Callback, JQuery Chaining, JQuery AJAX- JQuery

AJAX Introduction, JQuery Load, JQuery Get/Post, JQuery HTML, JQuery Get, JQuery Set, JQuery Add, JQuery Remove, JQuery CSS Classes, JQuery css().

UNIT-III

Bootstrap and PHP: Introduction to Bootstrap: Bootstrap Introduction, Bootstrap Components, Bootstrap Plugins, Bootstrap Grids, BootstrapJS

PHP: PHP Introduction-Installing PHP, PHP Syntax, PHP Variables, PHP Data Types, PHP Strings, PHP Constants, PHP Operators, PHP Programming Loops, PHP Functions, PHP Arrays, PHP Superglobals, PHP Forms and XML- PHP Form Handling, PHP Form Validation (Server side), PHP Required, PHP XML Parsers, PHP Simple XML Parser, PHP Simple XML Get, PHP XML DOM, PHP XML Expat

PHP with Mysql: PHP Mysql Database, PHP Connecting to Database, PHP Creating Records, PHP Selecting Records, PHP Deleting Records, PHP Updating Records, PHP Limit Data, PHP Insert Multiple.

AJAX with PHP: AJAX Introduction, AJAX PHP, AJAX Database, AJAX XML, AJAX Live Search

UNIT-IV

Introduction of advance concepts
Brief Introduction of concepts: Async and Parallel execution in JavaScript, JavaScript Design Pattern, SPA or Web App"s, Data binding, MVC or MVVM Frameworks, Introduction- Backbone and angular Js, GitHub, Node JS, Express & Meteor framework.

Text Book(s):

1. Jason N. Gaylord, Christian Wenz, Pranav Rastogi, Todd Miranda, Scott Hanselman, Scott Hunter, "Professional ASP. NET using C Sharp", Wrox
2. Semmy Purewal, "Learning Web Application Development", O"Reilly Media

Reference Book(s):

1. Jeffrey Winesett, "Web Application Development with Yii and PHP", Second Edition, Amazon.com
2. Pawel Kozlowski and Peter Bacon Darwin, "Mastering Web Application Development with Angular J.S.", Goodreads 2013

PRACTICAL/VIVA VOCE (SELECT ANY ONE LAB BASED ON CORE SIGNALS AND SYSTEMS LAB (BVMC505A(P))

LIST OF EXPERIMENTS:

1. Introduction to MATLAB and its basic commands.
2. Plot unit step, unit impulse, unit ramp, exponential, parabolic functions and sinusoidal signals
3. Plot the linear convolution of two sequences.
4. Plot the correlation of two sequences.
5. Plot the magnitude and phase spectra of a signal using Fourier transforms.
6. Plot the magnitude and phase spectrum of signal using Fourier series.
7. Find out the Z transform of a signal and check the stability using pole zero location.

8. Plot the spectra of ideally sampled signal w.r.t. sampling of Discrete time signals.
9. Verification of few properties of Fourier transform.
10. Evaluate the DTFS coefficients of a signal and plot them.
11. Plot the step response for any impulse response entered by user.

MOBILE APPLICATION DEVELOPMENT LAB (BVMC505B(P))

LIST OF EXPERIMENTS:

1. Develop an application that uses GUI components, Font and Colours.
2. Develop an application that uses Layout Managers and event Listeners.
3. Develop a native calculators application.
4. Write an application that draws basic graphical primitives on the screen.
5. Develop an application that use of Database.
6. Develop an application that makes use of RSS Feed
7. Implement an application that implements multi threading.
8. Develop an native application that uses GPS location information.
9. Implement an application that uses data to the SD card.
10. Implement an application that creates an alert upon receiving a message.
11. Write a mobile application that creates alarm clock.

PRACTICAL/VIVA VOCE
(SELECT ANY ONE LAB BASED ON CORE ELECTIVE-III)
WEB ENGINEERING LAB (BVMC506A(P))

LIST OF EXPERIMENTS:

Web Engineering Lab experiments.
1. Develop and demonstrate FTP server and FTP client (File Zilla)
2. Develop and demonstrate Telnet, HTTP
3. Develop and demonstrate the Search Engine

4. Develop and demonstrate the Configuration of Browsers
5. Demonstrate/ Develop the Apache Web Server
6. Demonstrate/ Develop the Tomcat Web Server
7. Demonstrate/ Develop the IIS Web Server
8. Demonstrate/ Develop the HTML,CSS, Form Controls
9. Demonstrate/ Develop the CGI, PERL
10. Demonstrate/ Develop the XML and XSL
11. Demonstrate/ Develop the Web Services
12. Demonstrate/ Develop the Java Script
13. Demonstrate/ Develop the Ajax
14. Demonstrate/ Develop the Secure Webs
15. Demonstrate/ Develop the Digital Signature

WEB APPLICATION AND DEVELOPMENT LAB (BVMC506B(P))

LIST OF EXPERIMENTS:

1. Create a simple HTML Form covering major form elements
2. Create a CSS3 based button
3. Use CSS3 to make an image rounded shape
4. Exercises on animations in CSS
5. Use the Bootstrap grids classes to create this webpage with a sidebar and main content:
6. Use the Bootstrap base CSS classes to add a quote, table, and search form to the page
7. Use the Bootstrap alert component to add a danger alert. Use the thumbnails classes to give the images borders.
8. Exercises on Javascript basics
9. Exercises on Javascript functions
10. Exercises on Javascript arrays
11. Exercises on Javascript Strings
12. Exercises on Javascript Basic Validation
13. Exercises on JQuery Core
14. Exercises on JQuery CSS
15. Exercises on JQuery Events
16. Exercises on PHP
17. Exercise on AJAX with PHP

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LANGUAGE LAB
(COMMON TO ALL DISCIPLINES)
(BVMC507P)

LIST OF EXPERIMENTS:

1. Fundamentals of Inter-personal Communication and Building Vocabulary
   - Self introduction and introducing others
   - Situational Dialogues: Starting a dialogue and responding relevantly & appropriately
   - Role-Play-Expressions in various situations
   - Social and Professional Etiquette: greetings, apologies, requests etc
   - Telephone Etiquette.
2. Non-verbal Communication
   - Gesture, posture and body language
   - Facial Expressions.
   - Paralinguistic Skills
   - Proxemics
   - Eye Gaze.
   - Haptics
   - Appearance.
3. Reading Comprehension and Listening Exercise
   - General vs Local Comprehension
   - Skimming, Scanning
   - Inference drawing
   - Critical reading
   - Listening , Hearing
4. Presentation Skills
   - Oral presentation
   - Seminar/ conference Paper Presentation
   - PPTs and Written presentation through poster/projects/reports/e-mails/assignments etc
   - Camera ready presentation
5. Group Discussion
   - Dynamics of Group Discussion
   - Intervention
   - Summarizing
   - Body Language and Voice, Intonation
6. Interview Skills
   - Interview etiquette
   - Body posture and body language

- Voice, intonation and modulation
- Fluency and organization of ideas
- Rubrics for evaluation: Concept and process, pre-interview planning, opening strategies, answering techniques,
- Interview through tele-conferencing and video-conferencing
- Mock interview
- Campus placement interview

7. Public and Professional Speaking
- Extempore
- Public Speech
- Professional speech/lecture

8. Articulation and Management
- Time management
- Articulation and expression
- Assertiveness
- Psychometrics
- Stress management

WIRELESS COMMUNICATION LAB (BVMC508P)

LIST OF EXPERIMENTS:

Experiments based on MATLAB OR SCILAB Write a MATLAB/ SCILAB Program/s based on

1. Free space Propagation Model & Frequency Selective Fading Model
2. Ground Reflection (Two-ray) Model
3. Diffraction (Knife-Edge) Model
4. Large-scale Empirical models
5. Small-scale Empirical models
6. Cellular Systems
7. Wireless LANs
8. Wireless Path loss Computations - Study of Propagation Path loss Models : Indoor & Outdoor (Using Matlab Programming)
    a. Free Space Propagation – Path Loss Model
    b. Link Budget Equation for Satellite Communication
    c. Carrier to Noise Ratio in Satellite Communication
    d. Outdoor Propagation – Okumura Model
    e. Outdoor Propagation – Hata Model
9. Experiments based on GSM (Using Wireless Communication Trainer)
    a. Study the implementation of –GMSK modulation, OQPSK detection.

b. Observe phase response of Tx and Rx and Spectrum of Tx and Rx.
c. Measure the BER value
d. GSM AT Commands
10. Experiments based on CDMA (Using Wireless Communication Trainer)
a. Study the performance of DS-CDMA system under multi-path condition for single user case
b. Using RAKE receiver with MRC method and EGC method
c. Observation of SNR vs BER curve for two different combining techniques.

MINOR PROJECT (BVMC509P)

INDUSTRIAL TRAINING-IV (BVMC510P)

SEMESTER VI
EMBEDDED SYSTEMS
(BVMC601)

OBJECTIVE:

The objective of the paper is to enable a student to design an embedded system for specific tasks.

UNIT-I

Overview of Embedded Systems: Characteristics of Embedded Systems. Comparison of Embedded Systems with general purpose processors. General architecture and functioning of micro controllers. 8051 micro controllers.

PIC Microcontrollers: Architecture, Registers, memory interfacing, interrupts, instructions, programming and peripherals.

UNIT-II

ARM Processors: Comparison of ARM architecture with PIC micro controller, ARM 7 Data Path, Registers, Memory Organization, Instruction set, Programming, Exception programming, Interrupt Handling, Thumb mode Architecture.

Bus Structure: Time multiplexing, serial, parallel communication bus structure. Bus arbitration, DMA, PCI, AMBA, I2C and SPI Buses.

UNIT-III

Embedded Software, Concept of Real Time Systems, Software Quality Measurement, Compilers for Embedded System.

UNIT-IV

RTOS: Embedded Operating Systems, Multi Tasking, Multi Threading, Real-time Operating Systems, RT- Linux introduction, RTOS kernel, Real-Time Scheduling.

Text Book(s):

1. John B. Peatman, "Design with PIC Microcontrollers", Pearson Education
2. Andrew N. Sloss, Dominic Symes, Chris Wright, "ARM System Developer"s Guide: Designing and Optimizing System Software", Morgan Kaufman Publication.
3. Wayne Wolf, "Computers as Components: Principles of Embedded Computing System Design", Morgan Kaufman Publication.

References Books:

1. Tim Wilmshurst, "The Design of Small-Scale Embedded Systems", Palgrave.
2. Marwedel, Peter, "Embedded System Design", Kluwer Publishers.

NETWORK SECURITY (BVMC602)

OBJECTIVE:

The objective of the paper is to make the students familiar with the basics of security concepts aspects, of networking. This course focuses on the networking security concepts, cryptography, algorithm, IDS. This is the introductory course on Security. So it requires Computer Network knowledge.

UNIT-I

Introduction to Network Security, Computer Security and Cyber Security. Security Terminologies and Principle, Security Threats, Types of attacks (Operating System, application level, Shrink Wrapcode, Misconfiguration attacks etc.). Introduction to Intrusion, Terminologies, Intrusion Detection System (IDS), Types of Intrusion Detection Systems.

UNIT-II

Cryptography, Classical Cryptographic Techniques, Encryption, Decryption, Code Breaking: Methodologies, Cryptanalysis, Cryptography Attacks, Brute-Force Attack, Use of Cryptography. Public key cryptography, Principles of Public key Crypto systems, Crypto graphic Algorithms RSA, Data Encryption Standard (DES), RC4, RC5, RC6, Blowfish, Key Management, Diffie-Hellman key exchange, elliptic curve cryptography.

UNIT-III

Hash Functions, One-way Hash Functions, SHA (Secure Hash Algorithm) Authentication Requirements, Authentication Functions, Kerberos. Message Authentication codes, Message Digest Functions, MD5, SSL (Secure Sockets Layer), SSH (Secure Shell), Algorithms and Security.

Digital Signature: Analysis, Components, Method, Applications, Standard, Algorithm: Signature Generation/ Verification, Digital Certificates.

UNIT IV

Trojans and Backdoors: Overt and Covert Channels, Working, Types (Remote Access Trojans, Data-Sending Trojans, Destructive Trojans, Trojans, Proxy Trojans, FTP Trojans, Security Software Disablers).

Viruses and Worms: Characteristics, Working, Infection Phase, Attack Phase. Sniffers: Definition, Spoofing, Sniffing, Vulnerable Protocols, Types.

Phishing: Methods, Process, Attacks Types (Man-in-the-Middle Attacks, URL Obfuscation Attacks, Hidden Attacks, Client-side Vulnerabilities, Deceptive Phishing, Malware-Based Phishing, DNS Based Phishing, Content-Injection Phishing, Search Engine Phishing).

Text Books:

1. William Stallings, "Cryptography and Network Security: Principles and Practice", Pearson
2. Atul Kahate, "Cryptography and Network Security" Mc-Graw Hill

Reference Books:

1. Charlie Kaufman, Radia Perlman, Mike Speciner, Michael Speciner, "Network Security Private Communication in a Public World", TMH
2. Fourozon, "Cryptography & Network Security", TMH
3. Joseph Migga Kizza, "Computer Network Security", Springer International Edition
4. Atul Kahate, "Cryptography and Network Security", McGraw Hill
5. Carl Endorf, Eugene Schultz, Jim Mell, "Intrusion Detection & Prevention", TMH
6. Neal, Krawetz, "Introduction to Network Security", Cengage Learning

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AD HOC AND SENSOR NETWORKS (BVMC603A)

OBJECTIVE:

The prerequisites are data communication networks, wireless communication and networks. The objective of the paper is to introduce infrastructure less wireless networking.

UNIT-I

Ad Hoc Wireless Networks: Introduction. Issues in Ad Hoc Wireless Networks. Ad Hoc Wireless Internet.

MAC Protocols for Ad Hoc Wireless Networks: Introduction, Issues in Designing a MAC Protocol for Ad Hoc Wireless Networks. Design Goals of a MAC Protocol for Ad Hoc Wireless Networks. Classifications of MAC Protocols. Contention-Based Protocols. Contention-Based Protocols with Reservation Mechanisms. Contention-Based MAC Protocols with Scheduling Mechanisms. MAC Protocols in Directional Antennas. Other MAC Protocols.

UNIT-II

Routing Protocols for Ad Hoc Wireless Networks: Introduction to Routing algorithm, Issues in Designing a Routing Protocol for Ad Hoc Wireless Networks. Classifications of Routing Protocols. Table-Driven Routing Protocols. On-Demand Routing Protocols. Hybrid Routing Protocols. Routing Protocols with Efficient Flooding Mechanisms. Hierarchical Routing Protocols. Power-Aware Routing Protocols.

Transport Layer and Security Protocols for Ad Hoc Wireless Networks: Introduction. Issues in Designing a Transport Layer Protocol for Ad Hoc Wireless Networks. Design Goals of a Transport Layer Protocol for Ad Hoc Wireless Networks. Classification of Transport Layer Solutions. TCP Over Ad Hoc Wireless Networks. Other Transport Layer Protocols for Ad Hoc Wireless Networks. Security in Ad Hoc Wireless Networks. Network Security Requirements. Issues and Challenges in Security Provisioning. Network Security Attacks. Key Management. Secure Routing in Ad Hoc Wireless Networks.

UNIT-III

Wireless Sensor Networks: Introduction. Sensor Network Architecture. Data Dissemination. Data Gathering. MAC Protocols for Sensor Networks. Location Discovery. Quality of a Sensor Network. Evolving Standards. Other Issues.

Hybrid Wireless Networks: Introduction. Next-Generation Hybrid Wireless Architectures. Routing in Hybrid Wireless Networks. Pricing in Multi-Hop Wireless Networks. Power Control Schemes in Hybrid Wireless Networks. Load Balancing in Hybrid Wireless Networks.

UNIT-IV

Wireless Geolocation Systems: Introduction. What is wireless Geolocation? Wireless Geolocation System Architecture. Technologies for Wireless Geolocation. Geolocation Standards for E-911 Services. Performance Measures for Geolocation Systems. Questions. Problems.

Recent Advances in Wireless Networks: Introduction. Ultra-Wide-Band Radio Communication. Wireless Fidelity Systems. Optical Wireless Networks. The Multimode 802.11 -IEEE 802.11a/b/g. The Meghadoot Architecture, introduction to vehicular sensor networks.

Text Book(s):

1. Siva Ram Murthy, C. and Manoj, B. S., Adhoc, "Wireless Networks Architectures and Protocols", 2nd Edition, Prentice Hall, PTR, 2004
2. Perkins, Charles E., "Ad hoc Networking", 3rd Edition, Addison Wesley, 2000

Reference Book(s):

1. Toh, C. K., "Ad hoc Mobile Wireless Networks Protocols and Systems", 3rd Edition Prentice Hall, PTR, (2001)
2. Pahlavan, Kaveh., Krishnamoorthy, Prashant., "Principles of Wireless Networks, - A United Approach", 2nd Edition, Pearson Education, 2002
3. Wang X. and Poor H.V., "Wireless Communication Systems", 3rd Edition, Pearson Education, 2004.
4. Schiller Jochen, "Mobile Communications", 2nd Edition, Pearson Education, 2003
5. Carlos De Morais Cordeiro and Dharam P Agrawal, "Adhoc and Sensor Networks-Theory & Applications", 2nd Edition, Cambridge University Press India Ltd

DIGITAL SIGNAL PROCESSING (BVMC603B)

OBJECTIVE:

The aim of this course is to provide in depth knowledge of various digital signal processing techniques and design of digital filters, learn the concept of DFT FFT algorithms, and design of digital filters using different approximations, DSP processor and architecture. The prerequisites of this subject are basic knowledge of signal and systems.

UNIT-I

Frequency Domain Sampling: The Discrete Fourier Transform, Properties of the DFT, Linear filtering methods based of the DFT.

Efficient computation of the DFT: Principal of FFT, Fast Fourier Transform Algorithms, Applications of FFT Algorithms, A linear filtering approach to computation of the DFT. Application of DFT, Design of Notch filter.

UNIT-II

Design & Structure of IIR filters from Analog filters: Impulse Invariance; Bilinear transformation and its use in design of Butterworth and Chebyshev IIR Filters; Frequency transformation in Digital Domain, Direct, Cascade, Parallel & transposed structure

UNIT-III

Design & structure of FIR filters: Symmetric and anti-symmetric FIR filters; Design of Linear Phase FIR filters using windows, Frequency Sampling Method of FIR design, Direct, Cascade, Frequency Sampling, transposed structure

Implementation of Discrete Time Systems:

Lattice structures, Lattice and Lattice-Ladder Structures, Schur - Cohn stability Test for IIR filters;

UNIT–IV

Quantization Errors in Digital Signal Processing: Representation of numbers, Quantization of filter coefficients, Round-off Effects in digital filters.

Multirate Digital Signal Processing: Decimation, Interpolation, Sampling rate conversion by a rational factor; Frequency domain characterization of Interpolator and Decimator.

Text Books:

1. Oppenheim & Schafer, "Digital Signal Processing", PHI.
2. Proakis and Manolakis, "Digital Signal Processing", PHI Publication

Reference Books:

S. K. Mitra, "Digital Signal Processing", TMH edition 2006

Johny R. Johnson, "Introduction to Digital Signal Processing", PHI.

R. Babu, "Digital Signal Processing", Sci Tech Publication.

CORE ELECTIVE-V
(SELECT ANY ONE)
SATELLITE COMMUNICATION
(BVMC604A)

OBJECTIVE:

To study the most relevant aspects of satellite communication with emphasis on the most recent application & developments. It covers orbital mechanics, launching techniques, satellite link design, earth& space segment, error control coding and different multiple access techniques.

UNIT-I

Principles of Satellite Communication: Evolution & growth of communication satellite, Satellite frequency allocation & Band spectrum, Advantages of satellite communication, Active & Passive satellite, Applications of satellite communication. Synchronous satellite, Satellite Launch.

Satellite Orbits: Introduction, Kepler"s Laws, Newton"s law, orbital parameters, orbital perturbations, station keeping, geo stationary and non-Geo-stationary orbits, LEO, MEO, Look Angle Determination- Limits of visibility –eclipse-Sub satellite point –Sun transit outage.

UNIT-II

Satellite Link Design: Basic transmission, System noise temperature, G/T ratio, design of down links, uplink design, Atmospheric Absorption, Rain induced attenuation.

Space Segment: Power Supply, Altitude Control, Station Keeping, Thermal Control, TT&C sub system, Transponders, Antenna Sub system.

Earth Segment: Subsystem of earth station, Transmit-Receive Earth Station, different types of earth stations, frequency coordination.

UNIT-III

Multiple Access Techniques: FDMA, FDMA down link analysis. TDMA, Satellite-switched TDMA, code division multiple access, DAMA, On board signal processing for FDMA/TDM Operation.

Error Control for Digital Satellite Links: Error detection and correction for digital satellite links, error control coding, Convolutional codes, satellite links concatenated coding and interleaving, Automatic Repeat Request (ARQ).

UNIT-IV

Interconnection of Satellite Networks: Interconnection with ISDN, Interconnection of television networks.

Satellite Applications: Satellite mobile services, VSAT, GPS, Radarsat, INMARSAT, Satellite navigational system. Direct broadcast satellites (DBS) - Direct to home Broadcast (DTH), World Space Services, Business TV (BTV).

Text Book(s):

1. Dennis Roddy, "Satellite Communication", McGraw Hill International.
2. T. Pratt, "Satellite Communication", John Willy and Sons (Asia) Pvt. Ltd.

Reference Books:

1. T. Ha, "Digital Satellite Communication", McGraw Hill.
2. Bruce R. Elbert, "The Satellite Communication Applications Handbook", Artech House Boston.
3. Mark R. Chartrend, "Satellite Communication" Cengage Learning
4. Handbook of Satellite Communication, Wiley.

INTERNET OF THINGS (BVMC604B)

OBJECTIVE:

Should have Vision and Introduction to IoT. Understand IoT Market perspective. Data and Knowledge Management and use of Devices in IoT Technology. Understand State of the Art – IoT Architecture. Real World IoT Design Constraints, Industrial Automation and Commercial Building Automation in IoT.

UNIT-I

Machine to Machine (M2M) to IoT- The Vision Introduction, From M2M to IoT, M2M towards IoT the global context, A use case example, Differing Characteristics.M2M to IoT – A Market Perspective– Introduction, Some Definitions, M2M Value Chains, IoT Value Chains.

UNIT-II

An emerging industrial structure for IoT. The international driven global value chain and global information monopolies. M2M to IoT An Architectural Overview– Building an architecture, Main design principles and needed capabilities, An IoT architecture outline, standards considerations.M2M and IoT Technology Fundamentals Devices and gateways, Local and Wide Area Networking, Data management, Business processes in IoT, Everything as a Service (XaaS), M2M and IoT Analytics, Knowledge Management.

UNIT- III

IoT Architecture State of the Art – Introduction, State of the art, Architecture Reference Model Introduction, Reference Model and architecture, IoT reference Model IoT Reference Architecture Introduction, Functional

View, Information View, Deployment and Operational View, Other Relevant architectural views.

UNIT-IV

Real World Design Constraints Introduction, Technical Design constraints hardware is popular again, Data representation and visualization, Interaction and remote control. Industrial Automation Service oriented architecture based device integration,

SOCRADES: Realizing the enterprise integrated Web of Things, IMCAESOP: from the Web of Things to the Cloud of Things, Commercial Building Automation Introduction,

Case Study: Phase one commercial building automation today, Case study: Phase two commercial building automation in the future.

Text Books:

1. Jan Holler, Vlasios Tsiatsis, Catherine Mulligan, Stefan Aves and Stamatis Karnouskos, David Boyle,"From Machine to Machine to the Internet of Things: Introduction to a New Age of Intelligence", 1st Edition,

Reference Books:

1. Vijay Madisetti and Arshdeep Bahga, "Internet of Things (A Handson Approach)", 1st Edition, VPT, 2014.
2. Francis DaCosta, "Rethinking the Internet of Things: A Scalable Approach to Connecting Everything", 1st Edition, Apress Publications, 2013

TELECOM SERVICE MANAGEMENT (BVMC604C)

OBJECTIVE:

To give sufficient knowledge of the role of a manager in telecom sector. To introduce the students to concepts of operations management, project management, marketing and general management.

UNIT-I

Telecom Technologies: Global Trends in telecommunication developments and Technological obsolescence, Convergence of services and technologies.

Telecom Network Components: Switch/routers, Backbone links and Gateways, etc.

Telecom Services: Modern Trends, Type of services, Universal Service Obligation (USO) and Universal Access Obligation (UAO), Millennium Development Goals in Telecom Sector: Service Penetrations.

UNIT-II

Operation Management: Network availability, Network Performance Indicators, Development of Efficiency Indicators for Operators, Divisions/Departments and Section/offices; Safety and Maintenance of Telecom Networks, Fault analysis, typical fault rates of network components, Spares dimensioning basis, Inventory Management. Management Information System (MIS): Objectives and Key indicators.

UNIT-III

Project Management: Concept of project planning and management and processes, Recent project planning approaches, Project cycle, Linkages between Plans/ Programs and projects, Project feasibility study – demand/need forecasting and analysis, technical analysis, financial analysis (NPV, ROI, IRR), economic analysis, social analysis, environmental analysis, Project planning matrix- logical framework, project appraisal and screening, Risk and uncertainty analysis and management, Project negotiation, Project organization, Project implementation plan (PERT, CPM, Network diagram, Gantt Chart).

UNIT- IV

Marketing Management: Role of marketing in service industries, marketing strategies – product/service strategies, pricing strategies, place strategies, promotion strategies. Demand /supply forecasting, market survey, pricing of NT, Marketing management issues and challenges of NT Ratios.

Text Book(s):

1. Harold Kernzer, "Telecom Project Management", Wiley, 2nd Edition
2. Scott Berkun, "The Art of Project Management", Tata McGraw Hill Publication.

Reference Book(s):

1. Harold Kernzer, "Project Management-Case Studies", Wiley, 5th Edition.
2. Harold Kernzer, "Project Recovery: Case Studies and Techniques for Overcoming Project Failure", Wiley

PRACTICAL/VIVA VOCE (SELECT ANY ONE LAB BASED ON CORE ELECTIVE-IV)

AD HOC AND SENSOR NETWORKS LAB (BVMC605A(P))

LIST OF EXPERIMENTS:

1. Drawing a wireless coverage map and measurements (cross validation through various measurement techniques, GPS, encounters, etc.)
2. Encounter based networks (discovering devices, building ad hoc net, increasing the coverage of the wireless net, using static or mobile nodes, etc.)
3. The „socializer" experiments: establishing friendship and interest group links in mobile societies (through analysis of traces, mobile device experiments, surveys, etc.)

4. Simulation of disaster scenarios and establishment of networks for the relief and search/rescue missions.
5. Demonstration of Send& Receive, Wireless network sensing
6. Demonstration of Remote event sensing & Recitation of wireless network sensing
7. Study to simulate a mobile ad hoc network using ns-2.
8. To study the mechanisms for implementing security and trust mechanisms in MANETs and WSNs.
9. To study the basic mobile ad hoc or wireless sensor network via simulations or programming of PDAs.
10. To study the limitations of wireless sensor networks and the work abounds needed to develop real-life Applications
11. To study the application layer support for wireless sensor implementations.

DIGITAL SIGNAL PROCESSING LAB (VMC605B(P))

LIST OF EXPERIMENTS:

Software Experiments:

1. Generation of basic signals sine, cosine, ramp, step, impulse and exponential in continuous and discrete domains using user defined functions.
2. Write a MATLAB program to find convolution (linear/circular) and correlation of two discrete signals.
3. Perform linear convolution using circular convolution and vice versa.
4. Write a MATLAB program to
   a. Find 8 point DFT, its magnitude and phase plot and inverse DFT.
   b. Find 16 point DFT, its magnitude and phase plot and inverse DFT.
5. Perform the following properties of DFT-
   a. Circular shift of a sequence.
   b. Circular fold of a sequence.
6. Write a MATLAB Program to design FIR Low pass filter using
   a. Rectangular window
   b. Hanning window
   c. Hamming window
   d. Bartlett window
7. Write a MATLAB program to
   a. Implement a Low pass / High pass / Band pass / Band stop IIR Filter using Butterworth Approximation.
   b. Implement a Low pass / High pass / Band pass / Band stop IIR Filter using Chebyshev Approximation.

Hardware Experiments using Texas Instruments Kits-DSK

8. Introduction to Code composer Studio.
9. Write a program to generate a sine wave and see the output on CRO
10. Write a Program to Generate ECHO to give audio file.
11. Write a program to demonstrate Band Stop filter by FIR.

Additional Experiments:

12. Write a program to generate a cos wave and see the output on CRO
13. Write a program to blink the LED
14. Write a program to display a string on LCD.

PRACTICAL/VIVA VOCE EMBEDDED SYSTEMS LAB (BVMC606P)

1. Introduction to microcontroller and interfacing modules.
2. To interface the seven segment display with microcontroller 8051
3. To create a series of moving lights using PIC on LEDs.
4. To interface the stepper motor with microcontroller.
5. To display character „A" on 8*8 LED Matrix.
6. Write an ALP to add 16 bits using ARM 7 Processor
7. Write an ALP for multiplying two 32 bit numbers using ARM Processor
8. Write an ALP to multiply two matrices using ARM processor

NETWORK SECURITY LAB (BVMC607P)

LIST OF EXPERIMENTS:

1. Scanning for vulnerabilities using any one of the Open Source Software like AngryIP, HPing2, IPScanner, Global Network Inventory Scanner.
2. Net BIOS Enumeration Using any one Tool like Net View Tool, Nbtstat Enumeration Tool (Open Source).
3. Steganography using any one tool like Merge Streams, Image Hide,
4. Steganalysis using any of the tools Stego Watch-Stego Detection Tool, Steg Spy.
5. How to Detect Trojans by using –Netstat, fPort, TCPView, CurrPorts Tool, Process Viewer.
6. Lan Scanner using look@ LAN, wireshark.
7. Understanding DoS Attack Tool (any two)- Jolt2,Bubonic.c,LandandLaTierra,Targa,NemesyBlast
8. Understanding of any two tools-Panther2, Crazy Pinger, Some Trouble, UDP Flood, FSMax.

INDUSTRIAL TRAINING-V (BVMC608P)

MAJOR PROJECT (BVMC609P)

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