SCHEME OF EXAMINATION

AND

COURSE OF STUDY

IN

B. TECH.

COMPUTER SCIENCE & ENGINEERING

(w. e. f. 2010-2011)

FACULTY OF ENGINEERING & TECHNOLOGY

GURUKULA KANGRI VISHWAVIDYALAYA,

HARIDWAR-249404

SEPTEMBER 2009

FACULTY OF ENGINEERING & TECHNOLOGY

GURUKULA KANGRI VISHWAVIDYALAYA, HARIDWAR

EXAMINATION RULES

1. GENERAL

1.1 There shall be B. Tech. Course in Computer Science & Engineering.

1.2 The duration of the course shall be four academic years comprising eight semesters.

1.3 A candidate seeking admission to this course must have passed Intermediate or 10+2 examination with Physics, Chemistry & Math as core subjects.

1.4 The merit for admission shall be prepared on the basis of entrance test conducted by the Vishwavidyalaya / All India Entrance Engineering Examinations conducted by CBSE or any organisation deputed by MHRD, Government of India.

1.5 Every candidate shall be examined in the course as laid down in the syllabus prescribed by Academic Council from time to time.

1.6 No candidate shall be deemed to have satisfied the examination requirement for the award of the B. Tech. degree in this course unless he fulfils the criteria for passing I year, II year, III year and IV year.

1.7 The Examination of each theory paper shall be of three hours duration and shall carry 100 marks, out of which 30% marks shall be reserved for periodicals which will be awarded based on commutative test (CT) comprising Periodical tests, teacher assessment (TA).

1.8 Subject to the status and ordinance of the Vishwavidyalaya, B. Tech. student shall remain under the control and discipline of the Dean of the Faculty.

2. SEMESTERWISE PASSING CRITERIA

2.1 Each candidate shall be required to secure at least 40% marks in each theory paper and 40% marks in Practical / Dissertation / Project / Seminar.

2.2 The candidates shall be required to secure minimum 40% marks in aggregate. Aggregate shall be taken into consideration only after a candidate passes a course, he will not be allowed to register in that course.

2.3 Any candidate who once passes Dissertation / Project shall not be allowed to undertake Dissertation / Project work again in any case and his same work will not be forward till he passes all the papers.

2.4 All the candidates taking re-examination shall have to abide by the rules and syllabi applicable in the semester they are appearing in. In case the paper in which re-examination is being taken is deleted from the syllabi, the old rules will be applied.

2.5 A candidate will have to appear in the paper(s) is held in subsequent corresponding semesters.

3. EXAMINATIONS

There shall be the following eight examinations in this course:

Examination I: On completion of the course of study for the I semester prescribed therein in the month of December of the first year of the course.

Examination II: On completion of the course of study for the II semester prescribed therein in the month of May of the first year of the course.

Examination III: On completion of the course of study for the III semester prescribed therein in the month of December of the second year of the course.

Examination IV: On completion of the course of study for the IV semester prescribed therein in the month of May of the second year of the course.

Examination V: On completion of the course of study for the V semester prescribed therein in the month of December of the third year of the course.

Examination VI: On completion of the course of study for the VI semester prescribed therein in the month of May of the third year of the course.

Examination VII: On completion of the course of study for the VII semester prescribed therein in the month of December of the fourth year of the course.

Examination VIII: On completion of the course of study for the VIII semester prescribed therein in the month of May of the fourth year of the course.

If a student fails in more than 50% papers including theory & practical, he shall not be promoted to next year till he clears the examinations of the previous year in which he fails.

4. DISSERTATION/MAJOR PROJECT WORK IN THE VIII SEMESTER

4.1 Each candidate shall be assigned major project by a departmental committee.

4.2 Candidate shall be required to perform his dissertation/project work under the supervision of the supervisor(s).

4.3 There shall be a seminar on the dissertation/project work of the candidate to be evaluated by a departmental committee chaired by H.O.D.

4.4 The dissertation/project work shall have to be submitted at the end of VIII semester. The candidate shall be required to submit three copies of the report of the dissertation/project work with a certificate from the supervisor(s) that the work is authentic record of the work performed by him

4.5 The report of the dissertation/project work shall be evaluated by the external examiner. The same external examiner shall hold the viva-voce examination.

5. ATTENDANCE

The students are required to have 75% attendance in each Theory/Practical paper and dissertation/project work etc. to be eligible for papering in the examination in each semester. Any student who does not fulfil this criteria will not be permitted to appear in examination. However in case of serious illness or any other unavoidable circumstances the relaxation in the attendance may be granted as per Vishwavidyalaya rules.

6. THE DISTRIBUTION OF MARKS FOR THE PRACTICAL / MINOR PROJECT / MAJOR PROJECT SHALL BE AS FOLLOWS:

PRACTICAL EXAMINATION		**MINOR PROJECT**		**MAJOR PROJECT**	
Experiment/programming	20	Project**	100	Project**	200
Viva-voce	15	Viva-voce/Presentation**	50	Viva-voce/Presentation**	100
Record*	15	Seminar (Internal)***	50	Seminar (Internal)***	100
Total	50	Total	200	Total	400

* - Marks of the record shall be treated as sessional evaluation.

** - Marks for the project work shall be awarded jointly by the external and internal examiners after viva-voce examination.

*** - There shall be a seminar on the project work of the student to be evaluated by the departmental committee chaired by H.O.D.

Revised Syllabus (Effective from the session 2010-11)

Gurukula Kangri Vishwavidyalaya, Haridwar
Faculty of Engineering & Technology
Computer Science & Engineering

B.Tech. I Year

Semester - I

S.N.	Course Code	Subject	Periods			Evaluation Scheme				Subject Total
						Sessional Exam			EXAM ESE	
			L	T	P	CT	TA	Total		
THEORY										
1.	ECH101 /EPH101	Engineering Chemistry / Engineering Physics	3	1	0	20	10	30	70	100
2.	EMA101	Engineering. Mathematics– I	3	1	0	20	10	30	70	100
3.	EME101/ EEE101	Fundamental of Mechanical Engineering / Basic Electrical Engineering	3	1	0	20	10	30	70	100
4.	ECS101/ EEC101	Introduction to Computers & Programming in 'C' / Basic Electronics Engineering	3	1	0	20	10	30	70	100
5.	EHU101/ EHU102	Vedic Engineering / Technical Communication	3	1	0	20	10	30	70	100
6.	ENS101/ EME102	Environmental Studies* / Basic Manufacturing Process	2/3	0/1	2/0	20	10	30	70	100
PRACTICAL										
7.	ECH151/ EPH151	Engineering Chemistry Lab / Engineering Physics Lab	0	0	2	0	15	15	35	50
8.	EME151/ EEE151	Basic Mechanical Engineering Lab / Basic Electrical Engineering Lab	0	0	2	0	15	15	35	50
9.	ECS151/ EEC151	Computer Programming Lab / Basic Electronics Engineering Lab	0	0	2	0	15	15	35	50
10.	EME153/ EME152	Engineering Graphics / Workshop Practice	0	0	3/2	0	15	15	35	50
		TOTAL	17/ 18	5/6	11/ 8	120	120	240	560	800

* There shall be no sessional evaluation in the subject Environmental Studies (ENS101)and 30 marks out of 100 for this subject have been assigned for practical examination conducted by external examiner.

L- LECTURE; T- TUTORIAL; P- PRACTICAL;
CT-CUMULATIVE TEST; TA- TEACHER ASSESSMENT; ESE–END SEMESTER EXAMINATION

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Gurukula Kangri Vishwavidyalaya, Haridwar
Faculty of Engineering & Technology
Computer Science & Engineering

B. Tech. I Year

Semester - II

S.N.	Course Code	Subject	Periods			Evaluation Scheme				Subject Total
						Sessional Exam			EXAM ESE	
			L	T	P	CT	TA	Total		
THEORY										
1.	EPH201/ ECH201	Engineering Physics/ Engineering Chemistry	3	1	0	20	10	30	70	100
2.	EMA201	Engineering Mathematics – II	3	1	0	20	10	30	70	100
3.	EEE201/ EME201	Basic Electrical Engineering / Fundamental of Mechanical Engineering	3	1	0	20	10	30	70	100
4.	EEC201/ ECS201	Basic Electronics Engineering / Introduction to Computers & Programming in 'C'	3	1	0	20	10	30	70	100
5.	EHU202/ EHU201	Technical Communication / Vedic Engineering	3	1	0	20	10	30	70	100
6.	EME202/ ENS201	Basic Manufacturing Process / Environmental Studies*	3/2	1/0	0/2	20	10	30	70	100
PRACTICAL										
7.	EPH251/ ECH251	Engineering Physics Lab /Engineering Chemistry Lab	0	0	2	0	15	15	35	50
8.	EEE251/ EME251	Basic Electrical Engineering Lab / Basic Mechanical Engineering Lab	0	0	2	0	15	15	35	50
9.	EEC251/ ECS251	Basic Electronics Engineering Lab / Computer Programming Lab	0	0	2	0	15	15	35	50
10.	EME252/ EME253	Workshop Practice / Engineering Graphics	0	0	2/3	0	15	15	35	50
		TOTAL	18/ 17	6/5	8/ 11	120	120	240	560	800

* There shall be no sessional evaluation in the subject Environmental Studies (ENS 201) and 30 marks out of 100 for this subject have been assigned for practical examination conducted by external examiner.

L- LECTURE; T- TUTORIAL; P- PRACTICAL;
CT-CUMULATIVE TEST; TA- TEACHER ASSESSMENT; ESE–END SEMESTER EXAMINATION

Revised syllabus (Effective from the session 2010-11)

ECH 101/ ECH 201
ENGINEERING CHEMISTRY

MM : 100 **Sessional : 30**
Time : 3 hrs **ESE : 70**
L T P **Pass Marks : 40**
3 1 0

NOTE: Ten questions are to be set taking two questions from each unit. The student has to attempt FIVE questions selecting one question from each unit. The previous year papers / model paper can be used as a guideline and the following syllabus should be strictly followed while setting the question paper.

UNIT I

Periodicity & Chemical Bonding: Atomic radii, Ionization potential, Electro negativity, Electro positivity, Electron affinity and their periodicity. Hybridization involving s, p and d orbital, partial ionic character, dipole moment and its applications, hydrogen bond and Vander Waal's forces, elementary treatment of M.O. theory and its application to homo nuclear diatomic molecules of I and II period elements.
Phase Rule: Gibbs phase rule (without derivation). Applications of Phase rule to one component system (H_2O and S) and two component system (KI- H_2O system). **7**

UNIT II

Chemical kinetics: Arrhenius equation, determination of activation energy, theories of reaction rates (collision and absolute reaction rate theory).
Photochemistry: Laws of Photochemistry, Quantum yield, Fluorescence, Phosphorescence, Chemiluminescence, Jabolinski diagram. **8**

UNIT III

Water Analysis: Hard & soft water, Specification of water, Analysis of water-alkalinity, hardness (EDTA Method only) of water for domestic use, Water softening-soda-lime process, anion exchangers, Boiler-feed water, Boiler problems-scale and sludge, priming & forming, Caustic embittlement & corrosion, their cause and prevention (Removal of dissolved gases, carbonate treatment, Phosphate conditioning, Colloidal conditioning), numerical problems based on hardness. Solid impurities (filterable, non-filterable), pH, D.O, B.O.D., C.O.D.
Polymers: Polymers, thermoplastics, thermosetting plastic, linear, branched & cross linked polymers etc., industrial application of polymers, addition, condensation polymerizations.
(I)Plastics: Structure, properties and uses of thermoplastic (Polyvinyl chloride, Teflon, Nylons and Polymethyl methacrylate) and thermosetting (Bakelite) materials.
(II)Rubber: natural Rubber and it's preparations, vulcanization, mechanism of vulcanization, synthetic rubber (General). **8**

UNIT IV

Fuels: Definition and classification, Calorific value; Gross & Net calorific value and their determination by Bomb calorimeter.
(I)Solid fuels: Coke-it's manufacture by Otto Hoffman oven and uses.
(II) Liquid fuels: Conversion of coal into liquid fuels (Bergius process & Fischer Tropsch process and mechanism), Petroleum- its chemical composition and fractional distillation.

Cracking of Heavy oil residues (Thermal cracking and catalytic cracking), Knocking & Anti knocking agents, octane and cetane numbers and their significance.
(III)Gaseous fuels: Natural Gas, Producer gas, Water gas, Carburetted water gas, Coal gas and Oil gas.
(IV)Nuclear fuels: Nuclear fission and nuclear fusion. Nuclear reactor.
Corrosion: Definition and types of corrosion, Electrochemical Theory of corrosion, laws of oxide film, different theories of corrosion, Atmospheric corrosion, stress corrosion water line, pitting and soil corrosion. Protective measures against corrosion **9**

UNIT V

Lubricants: Principle of Lubrication, types of Lubrication, Lubricating oil, fraction from crude oil, de-waxing of oil fraction, acid and solvent, refining of lubricating oils, properties of refined oils (viscosity, viscosity index, acid value, saponification value & iodine value, pour point and cloud point, flash point and fire point, aniline point, and their determination, Lubricant greases (Semi solid) and their Penetration and drop point tests, solid lubricants.
Name Reactions: Reimer Tieman reaction, Aldol Condensation, Diel's Alder Reaction, Wurt'z Reaction and Claisen Reaction. **8**

References

1. Principales of Physical chemistry : B.R. Puri, L.R. Sharma, M. Pathania
2. Advanced inorganic chemistry : Cotton
3. A text book of organic chemistry : S.K. Jain
4. Principals of Physical Chemistry : Samuel Glastone
5. A text book of Engineering chemistry : S.S. Dara
6. A text book of Engineering chemistry : Jain

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EMA 101
ENGINEERING MATHEMATICS I

MM : 100 **Sessional : 30**
Time : 3 hrs **ESE : 70**
L T P **Pass Marks : 40**
3 1 0

NOTE: Ten questions are to be set taking two questions from each unit. The student has to attempt FIVE questions selecting one question from each unit. The previous year papers / model paper can be used as a guideline and the following syllabus should be strictly followed while setting the question paper.

UNIT I

Differential Calculus I : Successive differentiation, Leibnitz theorem, Taylor's & Maclaurin's Expansion, Indeterminate forms, Radius of curvature, Asymptotes, Double points and their classification, Tracing of curves. **8**

UNIT II

Differential Calculus II : Partial Differentiation of functions, Normal to surfaces and tangent plane, Change of variables, Jacobian, Taylor's series of two variables, Truncation errors, Extrema of function of two and more variables, Method of Lagrange's multipliers. **7**

UNIT III

Multiple Integrals : Fundamental Theorem of integral calculus, Differentiation under the integral sign, Double and triple integrals, Change of order of integration, change of variables. Application to arc length, area , volume, centroid and moment of inertia. Gamma and Beta functions, Dirichlet's integral. **9**

UNIT IV

Vector Calculus : Differentiation of a vector, Scalar and vector fields, Gradient, Divergence, Curl and their physical meanings, Differential operator and identities, Line, Surface and Volume integrals, Green's theorem in plane. Gauss and Stoke's theorems (without proof). Simple applications. **8**

UNIT V

Matrices : Elementary row/ column operations, Rank of a matrix and its applications, Eigen-values and Eign vectors, Cayley-Hamilton theorem, Diagonalisation of Matrices, Linear dependence and independence, Normal matrices, Complex matrices and unitary matrices. **8**

References

1. Prasad C., A first course in mathematics for Engineers, Prasad Mudranalaya
2. Kreyszig E., Advanced Engineering Mathematics, John Wiley, New York, 1999
3. Grewal B.S., Higher Engineering Mathematics, Khanna, New Delhi, 2000
4. Srivastava R.S.L., Engineering Mathematics Vol.I

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EME 101/EME 201
FUNDAMENTAL OF MECHANICAL ENGINEERING

MM : 100 **Sessional : 30**
Time : 3 hrs **ESE : 70**
L T P **Pass Marks : 40**
3 1 0

NOTE: Ten questions are to be set taking two questions from each unit. The student has to attempt FIVE questions selecting one question from each unit. The previous year papers / model paper can be used as a guideline and the following syllabus should be strictly followed while setting the question paper.

UNIT I

Thermodynamics I: Introduction to SI units, Definition of thermodynamic system, Surrounding and Universe, Quasi static process, Energy interaction Zeroth law, Concept of temperature First law of thermodynamics, Application to closed and open system, Concept of Enthalpy, steady flow energy equation, Throttling process.

UNIT II

Thermodynamics II: Second law, reversible and irreversible process, Thermal reservoir, heat engines and thermal efficiency, COP of heat pump and refrigerator, Carnot cycle, Clausius inequality, Concept of entropy, Entropy change for ideal gases.

UNIT III

Thermodynamics III: Generation of steam at constant pressure, Properties of steam, Use of property diagram, Process of vapor in closed and open system, Rankine cycle. Stroke clearance ratio, Compression ratio, Definition and calculation of mean effective pressure (no proof) for air standard cycles (Otto and diesel cycles)

UNIT IV

Mechanics: Trusses: Plane structure, (Method of Joints and Sections only) Beams: Bending moment and shear force diagram for statically determinate beams.

UNIT V

Strength of Materials: Simple stresses and strain, strain energy, stress- strain diagram, elastic constants. Compound stress and strain: state of stress at a point, Simple tension, pure shear,general two dimensional stress system, principal planes, principal stresses and strains, Mohr's stress circle, Poisson's ratio, maximum shear stress

References

1 Kumar DS (2/e), Thermal Science and Engineering, S.K.Kataria, New Delhi,2001
2 P.K.Nag (2/e), Engineering Thermodynamics, TMH, New Delhi,2001
3 R.Yadav(7/e), Thermal Engineering, Central Publishing House, Allahabad, 2000
4 Shames Irving H.(4/e), Engineering Mechanics, PHI, New Delhi, 1994
5 Hibler (1/e), Statics and Dynamics, Pearson Education, Singapore, 2000
6 Pytel & Singer (1/e), Strength of Materials, Addison Wesley, 1999

Revised syllabus (Effective from the session 2010-11)

ECS 101/ECS 201
INTRODUCTION TO COMPUTER & PROGRAMMING IN 'C'

MM : 100 **Sessional : 30**
Time : 3 hrs **ESE : 70**
L T P **Pass Marks : 40**
3 1 0

NOTE: Ten questions are to be set taking two questions from each unit. The student has to attempt FIVE questions selecting one question from each unit. The previous year papers / model paper can be used as a guideline and the following syllabus should be strictly followed while setting the question paper.

UNIT I

Introduction to Computers: Block diagram of computers, functions of its important components, Memory and I/O devices. Concept of assembler, interpreter, compiler & generation of languages.

N**umber System:** Decimal, Binary, Octal, and Hexadecimal numbers and their arithmetic (addition, subtraction, multiplication, and division): 1's and 2's complements

UNIT II

Basic Operating System Concepts: MS-DOS, WINDOWS, UNIX, Functional knowledge of these operating systems. Introduction to basic commands of DOS & UNIX, Managing Files and Directories in various operating systems, Introduction to Internet, Basic terms related with Internet, TCP/IP.

UNIT III

Programming in C: History, Introduction to C Programming Languages, Structure of C Programs, Compilation and Execution of C Programs, Debugging techniques, Data Type and sizes, Declarations of variables, Modifiers, Identifiers and keywords, Symbolic Constants, Storage classes(automatic, external, register and static), Enumerations, command line parameters, Macros, The C Preprocessor.

Operators: Unary operators, Arithmetic & Logical operators, Bit wise operators, Assignment operators and expressions, Conditional expressions, Precedence and order of evaluation.

Control Statements: If-else, switch, break, continue, the coma operator, goto statement. **Loops:** while, do-while, for loop.

UNIT IV

Arrays: One-dimensional arrays: declaration, initialization and application. Two-dimensional array: declaration, initialization and application, Multidimensional arrays.
Handling of Character Strings: Declaring and initializing string variables, Reading strings, Writing strings, Arithmetic operation on strings, comparison of two strings and string handling functions.
Pointers: Accessing the address of the variable, Declaring and initializing pointers, accessing a variable through its pointer expression, pointer increment and scale factor, pointers and array, pointers and character strings.

UNIT V

Functions: Need for user defined function, Return value and its type, function calls, No argument and No return values function, Argument and No return values functions, argument and return value functions. Handling of non integer function, Scope and life time of variable in functions.

Recursion: Recursive Definition and processes, recursion in C, example of recursion, Tower oh Hanoi Problem, simulating recursion, Backtracking, recursive algorithms, principles of recursion, tail recursion, removal of recursion.

References

1. Rajaraman V.(3/e), Fundamental of Computers, PHI, New Delhi, 1999
2. Sanders,D.H., Computers Today, Mcgraw Hill, 1998
3. Kris Jamsa, DOS the complete reference, Tata McGraw Hill
4. J.Peek Tim O'reilly & M.Locekides, UNIX POWER TOOLS, BPB Publication
5. Yashwant Kanetkar, Let Us C, BPB
6. Yashwant Kanetkar, C In Depth, BPB

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EHU 101/EHU 201
VEDIC ENGINEERING

MM : 100 **Sessional : 30**
Time : 3 hrs **ESE : 70**
L T P **Pass Marks : 40**
3 1 0

NOTE: Ten questions are to be set taking two questions from each unit. The student has to attempt FIVE questions selecting one question from each unit. The previous year papers / model paper can be used as a guideline and the following syllabus should be strictly followed while setting the question paper.

UNIT I

Relevance of vedas in modern time, brief overview of the subject matter of four Vedas, symbolism in vedas, vedic god.

UNIT II

Geometry according to sulba Sutra.

Vedic mathematics (ekadhiken pooren, nikhil navtascharaman dashatah, oordhavatriyagyabhyam).

UNIT III

Measurements in vedic times, ancient scale of length, mass, time and temperature, vedic atomism, ancient indian view of structure of matter.

UNIT IV

Concepts of electrical, electronics aeronautical and computer engineering in vedic literature.

UNIT V

Concepts of mechanical, civil and architectural engineering in vedic literature.

References

1. Acharya Vaidyanath Sashtri, Science in Vedas, Sarvdeshik Arya Pratinidhi Sabha, Ramlila Ground, Ansari Road, Delhi.
2. S. R. Verma, Vedas: The sources of ultimate science, Nag Publisher, New Delhi.
3. Hansraj, Sciences in the Vedas, Shakti Publications, Ludhiana.
4. Swamisri Bharati Krishana Teerathaji, Vedic Mathematics, Motilal Banarasi Das, Delhi.

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ENS 101/ ENS 201
ENVIRONMENTAL STUDIES

MM : 100 **Sessional : 30**
Time : 3 hrs **ESE : 70**
L T P **Pass Marks : 40**
2 0 2

NOTE: Ten questions are to be set taking two questions from each unit. The student has to attempt FIVE questions selecting one question from each unit. The previous year papers / model paper can be used as a guideline and the following syllabus should be strictly followed while setting the question paper.

UNIT I

Multidisciplinary Nature of Environmental Studies & Ecosystems: (a) definition, scope and importance of ecology and environment (b) ecological components: (i) abiotic components: soil, water, light and temperature (ii) biotic components & their relationships- symbiosis, commensalisms, parasitism, predation and antibiosis (c) concept of an ecosystem (d) structure and function of an ecosystem (e) producers, consumers and decomposers (f) energy flow in the ecosystem (g) ecological succession (h) food chains, food webs and ecological pyramids (i) introduction, types, characteristic features, structure and function of the following ecosystems: (i) forest ecosystem (ii) grassland ecosystem (iii) desert ecosystem (iv) aquatic ecosystems (pond, river, ocean) (j) Need for public awareness

UNIT II

Natural Resources: (a) forest resources: use and over-exploitation, deforestation, timber extraction, mining; dams and their effects on forest and tribal people (b) water resources: use and over-utilization of surface and ground water, benefits and problems of dams (c) mineral resources: use and exploitation, environmental effects of extracting and using mineral resources (d) energy resources: growing energy needs, renewable and non renewable energy sources, use of alternate energy sources (e) land resources: land as a resource, land degradation, man induced landslides, soil erosion and desertification (f) biodiversity & its conservation: definition- genetic, species and ecosystem diversity, values of biodiversity- consumptive use, productive use, social, ethical, aesthetic and option values (g) India as a mega-diversity nation, hot-spots of biodiversity, threats to biodiversity- habitat loss, poaching of wildlife, man-wildlife conflicts; endangered and endemic species of India, conservation of biodiversity: *in-situ* & *ex-situ* methods (h) bio-geographical classification of India (i) role of an individual in conservation of natural resources (j) equitable use of resources for sustainable lifestyles

UNIT III

Environmental Pollution: (a) Definition, causes, effects and control measures of: air pollution, water pollution, soil pollution, noise pollution, thermal pollution and nuclear hazards (b) solid waste management- causes, effects and control measures of urban and industrial wastes (c) role of an individual in prevention of pollution (d) disaster management: floods, earthquake, drought & landslides

UNIT IV

Social Issues and the Environment: (a) from unsustainable to sustainable development (b) urban problems related to energy (c) rain water harvesting (d) resettlement & rehabilitation of

people- problems and concerns (e) environmental ethics- issues and possible solutions (f) wasteland reclamation (g) population growth and family welfare programme (h) environment and human health, human rights, value education (i) HIV/AIDS (j) role of information technology (IT) in environment and human health (k) global environmental issues: global warming, acid rain, ozone layer depletion

UNIT V

Environmental policies and laws: (a) salient features of following acts i. Environment Protection Act 1986 ii. Air (Prevention and Control of Pollution) Act 1981 iii. Water (Prevention and Control of Pollution) Act 1974 iv. Wildlife Protection Act 1972 v. Forest Conservation Act 1980 (b) issues involved in enforcement of environmental legislation (c) public awareness

References

1. Agarwal, K.C. *Environmental Biology*, Nidhi Publ. Ltd., Bikaner.
2. Bharucha E. *The Biodiversity of India*, Mapin Publishing Pvt. Ltd., Ahmedabad.
3. Clark R.S. *Marine Pollution*, Clanderson Press Oxford.
4. Cunningham, W.P., Cooper, T.H., Gorhani, E. & Hepworth, M.T. *Environmental Encyclopedia*, Jaico Publ. House, Mumabai.
5. De A.K. *Environmental Chemistry*, Wiley Eastern Ltd.
6. Gleick, H.P. *Water in Crisis*, Pacific Institute for Studies in Dev., Environment & Security. Stockholm Env. Institute Oxford Univ. Press.
7. Hawkins R.E. *Encyclopedia of Indian Natural History*, Bombay Natural History Society, Bombay.
8. Heywood, V.H & Waston, R.T. *Global Biodiversity Assessment*, Cambridge Univ. Press.
9. Odum, E.P. *Fundamentals of Ecology*, W.B. Saunders Co. USA.
10. Rao M N. & Datta, A.K. *Waste water treatment*, Oxford & IBH Publ. Co. Pvt. Ltd.
11. Sharma B.K. *Environmental Chemistry*, Geol Publ. House, Meerut.
12. Trivedi R.K. *Handbook of Environmental Laws, Rules Guidelines, Compliances and Standards*, Vol. I and II, Enviro Media.
13. Trivedi R. K. and Goel, P. K. *Introduction to air pollution*, Techno-Science Publication.
14. Wanger K.D. *Environmental Management*, W.B. Saunders Co. Philadelphia, USA.

Revised syllabus (Effective from the session 2010-11)

ECH 151/ ECH 251
ENGINEERING CHEMISTRY LAB

MM : 50 **Sessional: 15**
Time : 2 hrs **ESE: 35**
L T P **Pass Marks: 20**
0 0 2

LIST OF EXPERIMENTS

1. Find out the surface tension of given liquid by stalagnometer.
2. Find out the viscosity of given liquid by Ostwald's viscometer.
3. Find out pH of given acid/base solution by using pH meter.
5. Determine Na^+ and K^+ concentration using flame photometer.
6. Determine the turbidity of given solution/water sample by turibidimeter.
7. Determination of D.O. of water sample.
8. Find out distribution constant for the distribution of I_2 between CCl_4 and water.
9. Separate the given mixture indicator by using TLC.
10. Separate the given mixture by using paper chromatography
11. Determine the angle of rotation of given solution by using polarimeter.
12. Determination of strength of oxalic acid/Mohr salt by $KMnO_4$.
13. Determination of strength of oxalic acid/Mohr salt by $K_2Cr_2O_7$.
14. Determine the refractive index of given liquid by using Abbe's refractrometer.
15. Determine conductivity of given compound.
16. Determine absorption maxima and concentration of given $KMnO_4$ solution.
17 To observe fluorescence of fluorescent materials.
18. Determine acid value of given oil sample.
19. Determine iodine value of given oil sample.
20. Determine saponification value of given oil sample.

REFERENCES

1. Advanced practical physical chemistry : J.B. Yadav
2. Analytical chemistry Vol. I, II, III : Subhash, Satish
3. Applied chemistry : Virmani and Narula

NOTE

1. Each experiment shall carry 20 marks and 15 marks shall be reserved for viva-voce examination.
2. In practical examination the student shall be required to perform two experiments.
3. A teacher shall be assigned 20 students for daily practical work in laboratory.
4. No batch for practical class shall consist of more than 20 students.
5. The number of students in a batch allotted to an examiner for practical examination shall not exceed 20 students.
6. Addition/deletion in above list may be made in accordance with the facilities available with the approval of H.O.D./Dean.

Revised syllabus (Effective from the session 2010-11)

EME 151/ EME 251
BASIC MECHANICAL ENGINEERING LAB

MM : 50 **Sessional: 15**
Time : 2 hrs **ESE: 35**
L T P **Pass Marks: 20**
0 0 2

LIST OF EXPERIMENTS

1. To conduct the tensile test on a UTM and determine ultimate tensile strength, percentage elongation for a steel specimen.
2. To conduct the compression test and determine the ultimate compressive strength for a specimen.
3. To determine the hardness of the given specimen using Brinell / Rockwell / Vicker testing machine.
4. To study the 2-stroke I.C. Engine models.
5. To study the 4-stroke I.C. Engine model.
6. To study close loop system example (Turbine)
7. To study model of Locomotive boiler.
8. To study model of Bibcock boiler.
9. Study of Fire Tube boiler
10. Study of water Tube boiler

NOTE

7. Each experiment shall carry 20 marks and 15 marks shall be reserved for viva-voce examination.
8. In practical examination the student shall be required to perform one experiment.
9. A teacher shall be assigned 20 students for daily practical work in laboratory.
10. No batch for practical class shall consist of more than 20 students.
11. The number of students in a batch allotted to an examiner for practical examination shall not exceed 20 students.
12. Addition/deletion in above list may be made in accordance with the facilities available with the approval of H.O.D./Dean.

Revised syllabus (Effective from the session 2010-11)

ECS 151/ECS 251
COMPUTER PROGRAMMING LAB

MM : 50 **Sessional: 15**
Time : 2 hrs **ESE: 35**
L T P **Pass Marks: 20**
0 0 2

LIST OF EXPERIMENTS

1. Practice of all internal and external DOS commands.
2. Write simple batch program.
3. Giving exposure to windows environment.
4. File and program management in windows.
5. Practice of all UNIX commands.
6. Introduction to text editing and word processing.
7. Net surfing.
8. Creation and usage of E-mail account.
9. Write a program in C to perform different arithmetic operations.
10. Write a program in C to greater of two numbers.
11. Write a program in C to check whether no. is odd or even.
12. Write a program in C to check whether no. is prime or not.
13. Write a program in C to print Fibonacci series.
14. Write a program in C to print factorial of a no.
15. Write a program in C to add two matrices.
16. Write a program in C to search a no. in array.

NOTE

13. Each experiment shall carry 20 marks and 15 marks shall be reserved for viva-voce examination.
14. In practical examination the student shall be required to perform one experiment.
15. A teacher shall be assigned 20 students for daily practical work in laboratory.
16. No batch for practical class shall consist of more than 20 students.
17. The number of students in a batch allotted to an examiner for practical examination shall not exceed 20 students.
18. Addition/deletion in above list may be made in accordance with the facilities available with the approval of H.O.D./Dean.

Revised syllabus (Effective from the session 2010-11)

EME 153/EME253
ENGINEERING GRAPHICS

MM : 50 **Sessional: 15**
Time : 2 hrs **ESE: 35**
L T P **Pass Marks: 20**
0 0 3

LIST OF EXPERIMENTS

1. To understand graphics as a tool to communicate ideas, lettering and dimensioning, construction of geometrical figures.
2. To understand orthographic projection: principles of orthographic projections.
3. To understand principle and auxiliary planes.
4. To understand first and third angle projections.
5. To draw a sheet on projections of points.
6. To make two sheets based on projection of lines parallel to both the planes, parallel to one and inclined to other, inclined to both the planes, true length and traces of a line.
7. To make a sheet based on projection of planes, traces of planes, angles of inclinations of planes, parallel planes.
8. To make a sheet projection of solid in simple position, axis or slant edge inclined to one and parallel to other plane, solids lying on a face.
9. To make a sheet using section of solids lying in various positions, true shape of the section.
10. To make a sheet on development of lateral surfaces.
11. To understand isometric projection: principle of isometric projection, isometric projection using box and offset methods.
12. To practice two exercises using computer aided drawing: basic concepts and application.

NOTE

1. Each experiment shall carry 20 marks and 15 marks shall be reserved for viva-voce examination.
2. In practical examination the student shall be required to perform one experiment.
3. A teacher shall be assigned 20 students for daily practical work in laboratory.
4. No batch for practical class shall consist of more than 20 students.
5. The number of students in a batch allotted to an examiner for practical examination shall not exceed 20 students.
6. Addition/deletion in above list may be made in accordance with the facilities available with the approval of H.O.D./Dean.

Revised syllabus (Effective from the session 2010-11)

EPH 101/ EPH 201
ENGINEERING PHYSICS

MM: 100 **Sessional: 30**
Time: 3 hrs **ESE: 70**
L T P **Pass Marks: 40**
3 1 0

NOTE: Ten questions are to be set taking two questions from each unit. The student has to attempt FIVE questions selecting one question from each unit. The previous year papers / model paper can be used as a guideline and the following syllabus should be strictly followed while setting the question paper.

UNIT I

Optics: Interference of light, Coherence, Fresnel's Biprism, Interference in thin films & wedge shaped film, Newton's rings. Diffraction of light, Diffraction at a single slit, Double slits, Plane transmission grating.
Polarization of light,Brewester's Law, Mauls law, Double refraction, Nicol Prism, Production and analysis of polarized light.
8

UNIT II

Electromagnetics: Gauss' law and its applications.Maxwell's equations, Poynting theorem, Electromagnetic wave equation (elementary idea of each, no derivation). Magnetic induction, Magnetic field intensity, Magnetic permeability and susceptibility (definitions only), Dia, Para,& ferromagnetic materials (Qualitative idea only). Motion of charged particle in uniform electric and magnetic field, Magnetic and electrostatic focusing, Function and block diagram of CRO. **8**

UNIT III

Special Theory of Relativity & Quantum Theory: Inertial & non-inertial frames of reference, Galilean transformation, Lorentz transformation equation of space and time, Michelson-Morlay experiment, Postulates of special theory of relativity, Length contraction, Time dilation, Addition of velocities, Mass energy equivalence& variation of mass with velocities.
Quantum theory of radiations, Planck's law, Photoelectric effect, de-Broglie concept of matter waves, Davisson and Germer experiment, Heisenberg uncertainty principle and its applications, Schrodinger wave equation and its solution for a particle in a box.
10

UNIT IV

Atomic & Nuclear Physics: Bohr's atomic model and energy level diagram, Sommerfeld relativistic atomic model, Vector atom model, Franck-Hertz experiment, Quantum numbers, general properties of nucleus, Mass defect and packing fraction, Nuclear binding energy, Semi-empirical mass formula. **7**

UNIT V

Solid State Physics: Crystal structure, Miller indices, Separation between lattice planes, Different kinds of crystal bonding, Formation of energy bands in solids (energy level approach), classification of solids, Basic idea of conduction mechanism in semiconductors, Hall effect, X-ray diffraction & Bragg's Law. **7**

References

1. Vasudeva AS, Modern Engineering Physics, S Chand, New Delhi, 1998.
2. Ghatak Ajoy, Optics, TMH, New Delhi, 1999.
3. K.K. Tiwari, Text book of Electricity and Magnetism, S.Chand, New Delhi, 2001
4. Rajam JB.,Atomic Physics, SChand, New Delhi;2000.
5. Beiser Arthur,Concepts of Modern Physics, TMH, New Delhi,1999
6. Mani HS, Modern Physics, New Delhi,1999
7. Kittel Charles(7/e), Introduction to Solid State Physics, John Wiley, Singapore, 1996
8. Murugeshan R (8/e), Modern Physics, S.Chand,New Delhi,2001
9. Kaplan lrving , Nuclear Physics, Narosa ,New Delhi,1998
10. Schiff (3/e), Quantum Mechanics, McGraw, Auckland
11. S.R.Verma, Engg. Physics Vol-I & Vol-II, 2009.

Revised syllabus (Effective from the session 2010-11)

EMA 201
ENGINEERING MATHEMATICS II

MM : 100 **Sessional : 30**
Time : 3 hrs **ESE : 70**
L T P **Pass Marks : 40**
3 1 0

NOTE: Ten questions are to be set taking two questions from each unit. The student has to attempt FIVE questions selecting one question from each unit. The previous year papers / model paper can be used as a guideline and the following syllabus should be strictly followed while setting the question paper.

UNIT I

Differential Equation : Ordinary differential equations of first order, orthogonal trajectories, linear differential equations with constant coefficients, Euler- Cauchy equations, Equations of the form $y'' = f(y)$. Solution of second order differential equations by change of dependent and independent variables, Method of variation of parameters for second order differential equations. Simple applications. **8**

UNIT II

Partial Differential Equations and its Applications : Introduction of partial differential equations, Linear partial differential equations of II order with constant coefficients and their classifications - parabolic, elliptic and hyperbolic with illustrative examples, Method of separation of variables. Wave and Heat equation up to two-dimensions. **9**

UNIT III

Solution in Series : solution in series of second order linear differential equations, Bessel's and Legendre's equations and their solutions, Properties of Bessel function and Legendre's polynomials, Recurrence relations, Generating functions, Jacobi series, Integral representation of Bessel's functions. **8**

UNIT IV

Fourier Series : Fourier series, Dirichlet's condition and convergence. Half range series, Harmonic analysis. **6**

UNIT V

Statistics : Moments, Moment generating functions. Binomial, Poisson and Normal distributions. Correlation and Regression. Method of least squares and curve fitting - straight line and parabola. **8**

References

1. Grewal B.S., Higher Engineering Mathematics, Khanna, New Delhi, 2000
2. Kreyszig E., Advanced Engineering Mathematics, John Wiley, New York, 1999
3. Prasad C.,Advanced Mathematics for Engineers, Prasad Mudranalaya
4. Kapur J. N. & Saxena H.C., Mathematical Statistics

Revised syllabus (Effective from the session 2010-11)

EEE 101/EEE 201
BASIC ELECTRICAL ENGINEERING

MM : 100 **Sessional : 30**
Time : 3 hrs **ESE : 70**
L T P **Pass Marks : 40**
3 1 0

NOTE: Ten questions are to be set taking two questions from each unit. The student has to attempt FIVE questions selecting one question from each unit. The previous year papers / model paper can be used as a guideline and the following syllabus should be strictly followed while setting the question paper.

UNIT I

D.C. Network Theory: Concept of elements**,** Circuit theory concepts- Mesh and node analysis, Star-Delta transformation. Network Theorems- Super-position theorem, Thevenin's theorem, Norton's theorem, Maximum Power Transfer theorem, DC Transients- RL, RC circuits.

UNIT II

Steady State Analysis of A.C. Circuits: Sinusoidal and Phasor representation of voltage and current, average and rms value, form and peak factor of sinusoidal and different waveforms, single -phase A.C. circuit- behavior of resistance, inductance and capacitance and their combination in series & parallel and power factor, series parallel resonance-band width and quality factor.
Three Phase A.C. Circuits: Star-Delta connections, line and phase voltage/current relations, three -phase power and its measurement.

UNIT III

Magnetic Circuits: Ampere turns, magnetomotive force, permeability, reluctance, composite magnetic circuits, comparison between magnetic and electric circuits.
Transformer: Principle of operation, types of construction, phasor diagram, equivalent circuit, efficiency and voltage regulation of single-phase transformer, O.C. and S.C. tests.

UNIT IV

D. C. Machines : Principle of electromechanical energy conversion, types of D.C. machines, E.M.F. equation, Magnetization and load characteristics, losses and efficiency, speed control of D.C. motors and applications.
Measuring Instruments: Principle of working and constructional features of Permanent Magnet Moving Coil and Moving Iron ammeters and voltmeters, Electrodynamic Wattmeter, Induction type single-phase Energy meter.

UNIT V

Three-phase Induction Motor: Principle of operation, types and methods of starting, slip-torque characteristics and applications.
Single-phase Induction Motor: Principle of operation, methods of starting.
Three-phase Synchronous Machines: Principle of operation and application of synchronous motor.

Text Books

1. V. Del Toro, Principles of Electrical Engineering, Prentice Hall International.
2. H. Cotton, Advanced Electrical Technology, Wheeler Publishing.
3. E. Huges, Electrical Technology.

References

1. B. L., Theraja, Electrical Technology, Vol-1, S. Chand Publisher, New Delhi.
2. W.H. Hayt & J.E. Kennedy, Engineering circuit Analysis, Mc Graw Hill.
3. I.J. Nagrath, Basic Electrical Engineering, Tata Mc Graw Hill.

4. A.E. Fitgerald, D.E., Higginbotham and A Grabel, Basic Electrical Engineering, Mc Graw Hill.
5. Ashfaq Hussain, Fundamentals of Electrical Engineering, Dhanpat Rai Publish.

Revised syllabus (Effective from the session 2010-11)

EHU 102/EHU 202
TECHNICAL COMMUNICATION

MM : 100
Sessional : 30
Time : 3 hrs
ESE : 70
L T P **Pass**
Marks : 40
3 1 0

OBJECTIVES:
--To sensitize the learners to non-verbal communication.
--To expose the learners to English sound system and acquire phonetic skill and speech Rhythm.
--To help the learners use grammar correctly.
--To train the learners to speak and write English clearly, intelligibly and effectively;

NOTE: Ten questions are to be set taking two questions from each unit. The student has to attempt FIVE questions selecting one question from each unit. The previous year papers / model paper can be used as a guideline and the following syllabus should be strictly followed while setting the question paper.

UNIT I

Non-Verbal Communication : Kinesics (body language) - Personal appearance, Facial expression, Platform position, Breathing, Use of hands, Graceful Movements and confident postures, Eye contact, Weight of the body
Proxemics (Space language) - Personal, public and social space language .
Paralanguage (voice) - Pitch variation, Speaking speed, Pause, Word stress, Rhythm and intonation
Process and Barriers of Communication
8

UNIT II

Applied Phonetics: Consonantal sounds, Vowel sounds, Diphthongs, Use of Dictionary, Difference between British and American Usage
6

UNIT III

English Grammar and Usage: Some useful Expressions (introduction, greetings etc. that are used frequently, Syntax (Common errors in the use of parts of speech)
8

UNIT IV

Communicative Skills (LS): Listening and Speaking skills- Group discussions, Interviews Individual Presentation skills
6

UNIT V

Communicative Skills (RW) :Reading Skill -Value based fallowing text readings
i) The Heritage of India by AL Basham

ii) Of Studies by Francis Bacon
iii) The Civilization of Today by CEM Joad
iv) Making Writing Simple by Jonathan Swift
v) How should One Read a Book? By Virginia Woolf

Writing skill : Job application, Curriculum Vitae/Resume, Proposal & style of technical writing **12**

Recommended Books

1. Agarwal, S K. & Singh, *P K. Effective Business Communication.* New Delhi: Himanshu Publications.
2. Balasubramaniam, T. *Phonetics for Indian Students*. Macmillan India Ltd.
3. Krishnaswamy, N. "*Modern English*. Macmillan India Ltd.
4. Koneru, Aruna. Professional Communication. New Delhi: Tata Mc Graw-Hill Publishing Company Ltd.
5. Mohan, Krishna & Banerji, Meera. *Developing Communication Skill*. Macmillan India Ltd.
6. Pandey, L.U.B. & Singh, R.P. *A Manual of Practical Communication*. A.I.T.B.S. Pub. India Ltd. Krishan Nagar, Delhi.
7. Rizvi, M Ashraf. *Effective Technical Communication*. New Delhi: Tata Mc Graw-Hill Publishing Company Ltd.
8. *Singh, R.P. An Anthology of English Essays*. OXFORD University Press.

Dictionaries

1. Daniel, Jones. English Pronouncing Dictionary. Cambridge University Press.
2. Oxford Advanced Learners' Dictionary.
3. Longman's Dictionary of Contemporary English

Revised syllabus (Effective from the session 2010-11)

EME 102/EME 202
BASIC MANUFACTURING PROCESS

MM : 100 **Sessional : 30**
Time : 3 hrs **ESE : 70**
L T P **Pass Marks : 40**
3 1 0

NOTE: Ten questions are to be set taking two questions from each unit. The student has to attempt FIVE questions selecting one question from each unit. The previous year papers / model paper can be used as a guideline and the following syllabus should be strictly followed while setting the question paper.

UNIT I

Introduction : Classification of Manufacturing Process, Composition , Properties and uses of wrought iron, cast iron, Malleable iron ,Carbon and alloy steels, Copper, Aluminum, lead, brass, bronze, duralumin, bearing metals, high temperature metals , Properties of metals: Strength , Elasticity, Stiffness , Plasticity, Malleability , Ductility, Brittleness, Toughness, Hardness, Impact Strength, Fatigue.

UNIT II

Metal Casting: Scope of moulding, moulding sands, Principles of metal casting, pattern materials, types and allowances: classification of moulds, roles of gate, runner and riser, core, core box, and core print. Introduction of dicasting, permanent mould casting, investment casting, casting defects.

UNIT III

Metal Joining: Welding Principles, Classification of welding techniques, oxy-acetylene gas welding, Electric Arc welding, Electric resistance welding, Spot, Seam, Butt welding, Flux: composition, properties and function, Brazing and soldering, types of joints

UNIT IV

Machine Shop and Metal Cutting : Brief description of Lathe, drilling, shaping, planning, milling machines, Cutting tools used and their materials and geometry. Introduction & Profile Programming to CNC machines.

UNIT V

Carpentry: Characteristics of Soft Wood & Hard Wood, object & Methods Seasoning. Cutting, Drilling, Boring, Striking, Miscellaneous & Shaving tools. Types of Saw, Chisels & Planes.

Fitting: Operation of the Fitting Shop. Type of Vices & Clamps. Marking , Cutting, Drilling & Boring tools. Classification of Files, Hacksaw, Scrapers, Hammer, Taps, Dies, Drill, Surface Plate.

References

1. Hazra and Chowdhary (11/e), Workshop Technology (Vol 1 and 2), Media, Mumbai, 2000
2. B.S.Raghuvanshi (9/e),Workshop Technology (Vol 1 and 2), Dhanapat Rai, Delhi, 2001
3. Lindeberg Ray A, (4/e), Process & Materials of Manufacturing, PHI, New Delhi, 1995
4. Degarmo, Materials and Processes in Manufacturing, PHI, New Delhi, 2000
5. Begmen , Manufacturing Processes

Revised syllabus (Effective from the session 2010-11)

EPH 151/ EPH 251
ENGINEERING PHYSICS LAB

MM : 50 **Sessional: 15**
Time : 2 hrs **ESE: 35**
L T P **Pass Marks: 20**
0 0 2

LIST OF EXPERIMENTS

1. To determine the value of Stefan's constant by electrical method.
2. To determine the focal points, principal points and focal length of a combination of lenses by Newton's method and its verification.
3. To determine the focal length of a combination of two lenses by Nodal Slide method and to locate the position of cardinal points.
4. To determine the dispersive power of the material of the given prism.
5. To determine the wavelength of spectral lines by plane transmission grating.
6. To determine the wavelength of monochromatic light with the help of Newton's ring method.
7. To determine the wavelength of monochromatic light with the help of Fresnel's Biprism.
8. To study the variation of magnetic field along the axis of the current carrying coil and then to estimate the radius of the coil.
9. To determine the e/m of electron by magnetron method.
10. To study the characteristics of a photocell.
11. To determine the value of Plank's constant by photoelectric effect.
12. To study the Energy band gap of a semi conducting sample by Four Probe method.
13. To study the Hall effect using Hall effect set up.
14. To determine the susceptibility by Quink's method.
15. To determine the specific resistance of the material of the given wire using C.F. bridge.
16. To study the nature of polarization of Laser light& to verify malus Law.

NOTE

1. Each experiment shall carry 20 marks and 15 marks shall be reserved for viva-voce examination.
2. In practical examination the student shall be required to perform one experiment.
3. A teacher shall be assigned 20 students for daily practical work in laboratory.
4. No batch for practical class shall consist of more than 20 students.
5. The number of students in a batch allotted to an examiner for practical examination shall not exceed 20 students.
6. Addition/deletion in above list may be made in accordance with the facilities available with the approval of H.O.D./Dean.

Revised syllabus (Effective from the session 2010-11)

EEE 151/EEE 251
BASIC ELECTRICAL ENGINEERING LAB

MM : 50 **Sessional: 15**
Time : 2 hrs **ESE: 35**
L T P **Pass Marks: 20**
0 0 2

LIST OF EXPERIMENTS

1. Verification of Kirchoff's laws.
2. Verification of Thevenin's theorems.
3. Verification of Norton's theorem
4. Verification of Superposition theorem.
5. Verification of maximum power transfer theorem.
6. Measurement of power in three-phase circuit by two wattmeter method.
7. Determination of efficiency of a single-phase transformer by load test.
8. To perform open circuit test on single-phase transformer & find equivalent circuit parameters.
9. To perform short circuit test on single-phase transformer & find equivalent circuit parameters.
10. D.C. generator characteristics
    (a) Shunt generator
    (b) Series generator
    (c) Compound generator
11. Speed control of D.C. shunt generator.
12. To study running and reversing of a three-phase Induction Motor.
13. To study & calibration of a single-phase Energy Meter.
14. Calibration of voltmeter and ammeter.
15. To study of resonance in RLC circuit.

NOTE

1. Each experiment shall carry 20 marks and 15 marks shall be reserved for viva-voce examination.
2. In practical examination the student shall be required to perform one experiment.
3. A teacher shall be assigned 20 students for daily practical work in laboratory.
4. No batch for practical class shall consist of more than 20 students.
5. The number of students in a batch allotted to an examiner for practical examination shall not exceed 20 students.
6. Addition/deletion in above list may be made in accordance with the facilities available with the approval of H.O.D./Dean.

Revised syllabus (Effective from the session 2010-11)

EEC 151/ EEC 251
BASIC ELECTRONICS ENGINEERING LAB

MM : 50 **Sessional: 15**
Time : 2 hrs **ESE: 35**
L T P **Pass Marks: 20**
0 0 2

LIST OF EXPERIMENTS

1. To draw the V-I characteristics of PN junction diode.
2. To draw the V-I characteristics of Zener diode.
3. To study junction diode as half wave and full wave rectifier.
4. To study junction diode as clipper and clamper.
5. To study the Zener diode as voltage regulator.
6. To draw the input and output characteristics of a transistor in CE configuration.
7. To draw the input and output characteristics of a transistor in CB configuration.
8. To find the small signal h-parameters of a transistor.
9. To study various logic gates.
10. To study Op-Amp as inverting and non- inverting amplifier.
11. To study Op-Amp as adder and subtractor.
12. To study Op-Amp as differentiator and integrator.

NOTE

1. Each experiment shall carry 20 marks and 15 marks shall be reserved for viva-voce examination.
2. In practical examination the student shall be required to perform one experiment.
3. A teacher shall be assigned 20 students for daily practical work in laboratory.
4. No batch for practical class shall consist of more than 20 students.
5. The number of students in a batch allotted to an examiner for practical examination shall not exceed 20 students.
6. Addition/deletion in above list may be made in accordance with the facilities available with the approval of H.O.D./Dean.

Revised syllabus (Effective from the session 2010-11)

EME 152/EME252
WORKSHOP PRACTICE

MM : 50 **Sessional: 15**
Time : 2 hrs **ESE: 35**
L T P **Pass Marks: 20**
0 0 2

LIST OF EXPERIMENTS

Carpentry Shop
1. To prepare a half T joint of given dimensions.
2. To prepare a wooden pattern of given dimensions.

Moulding Shop
3. To prepare a mould of half bearing.
4. To prepare a mould using core.

Metal Joining.
5. To prepare a butt joint of MS strips using Arc welding.
6. To prepare a T joint of MS strips using Oxy Acetylene gas welding.

Fitting Shop
7. To prepare a rectangular piece with slant edge of given size from M.S. flat.

Machine Shop
8. To prepare a job on Lathe machine of given shape and size.
9. To prepare a job on Shaper machine of given shape and size.
10. To prepare a job on Milling machine of given shape and size.
11. To prepare a job on CNC train master of given shape and size.
12. To prepare a job on drilling machine of given shape and size.

NOTE
1. Each experiment shall carry 20 marks and 15 marks shall be reserved for viva-voce examination.
2. In practical examination the student shall be required to perform one experiment.
3. A teacher shall be assigned 20 students for daily practical work in laboratory.
4. No batch for practical class shall consist of more than 20 students.
5. The number of students in a batch allotted to an examiner for practical examination shall not exceed 20 students.
6. Addition/deletion in above list may be made in accordance with the facilities available with the approval of H.O.D./Dean.

Revised Syllabus (Effective from the session 2011-12)

Gurukula Kangri Vishwavidyalaya, Haridwar
Faculty of Engineering & Technology
Computer Science & Engineering

B.Tech. II Year

Semester - III

S.N.	Course Code	Subject	Periods			Evaluation Scheme				Subject Total
						Sessional Exam			EXAM ESE	
			L	T	P	CT	TA	Total		
THEORY										
1.	ECS301/ ECS405	C & Data Structure	3	1	0	20	10	30	70	100
2.	EMA301	Engineering Mathematics- III	3	1	0	20	10	30	70	100
3.	ECS302	Computer Organization	3	1	0	20	10	30	70	100
4.	EEC302	Digital Electronics	3	1	0	20	10	30	70	100
5.	ECS303	System Analysis And Design	3	1	0	20	10	30	70	100
6.	EEE302/ EEE403	Network Analysis & Synthesis	3	1	0	20	10	30	70	100
PRACTICAL										
7.	ECS351/ ECS454	Data Structure Lab	0	0	2	0	15	15	35	50
8.	EHU351/ EHU651/ EHU551	Technical Communication Lab	0	0	2	0	15	15	35	50
9.	ECS352	Computer Organization Lab	0	0	2	0	15	15	35	50
10.	EEC352	Digital Electronics Lab	0	0	2	0	15	15	35	50
		TOTAL	18	6	8	120	120	240	560	800

L- LECTURE; T- TUTORIAL; P- PRACTICAL;
CT-CUMULATIVE TEST; TA- TEACHER ASSESSMENT; ESE–END SEMESTER EXAMINATION

Revised Syllabus (Effective from the session 2011-12)

Gurukula Kangri Vishwavidyalaya, Haridwar
Faculty of Engineering & Technology
Computer Science & Engineering
B.Tech. II Year

Semester - IV

S.N.	Course Code	Subject	Periods			Evaluation Scheme				Subject Total
						Sessional Exam			EXAM ESE	
			L	T	P	CT	TA	Total		
THEORY										
1.	ECS401	Software Engineering	3	1	0	20	10	30	70	100
2.	EMA401	Discrete Mathematics	3	1	0	20	10	30	70	100
3.	ECS402	Operating System	3	1	0	20	10	30	70	100
4.	EMA402	Numerical Analysis	3	1	0	20	10	30	70	100
5.	ECS403	Advance Data Structure	3	1	0	20	10	30	70	100
6.	ECS404/ ECS505	Object Oriented Programming Using C++	3	1	0	20	10	30	70	100
PRACTICAL										
7.	ECS451	Advance Data Structure Lab	0	0	2	0	15	15	35	50
8.	ECS452/ ECS554	Object Oriented Programming Lab	0	0	2	0	15	15	35	50
9.	EMA452	Numerical Analysis Lab	0	0	2	0	15	15	35	50
10.	ECS460	Seminar	0	0	2	0	50	50	0	50
		TOTAL	18	6	8	120	155	275	525	800

L- LECTURE; T- TUTORIAL; P- PRACTICAL;
CT-CUMULATIVE TEST; TA- TEACHER ASSESSMENT; ESE–END SEMESTER EXAMINATION

Revised syllabus (Effective from the session 2011-12)

ECS 301 / ECS 405
C & DATA STRUCTURE

MM : 100 **Sessional : 30**
Time : 3 Hr **ESE : 70**
L T P **Pass Marks : 40**
3 1 0

NOTE : Ten questions are to be set taking two questions from each unit. The student has to attempt FIVE questions selecting one question from each unit. The previous year papers / model paper can be used as a guideline and the following syllabus should be strictly followed while setting the question paper.

UNIT I

Structures: Structures definition, giving value to members, structure initialization, array of structures, array within structures, structures within structures, structures and functions,Structure Pointrers.
File Handling: Creating and Deleting a File, Updating File, Copying File, Searching & Sorting in a File.
Complexity: Algorithm Complexity and Time-Space trade-off.

UNIT II

Stack: Array representation and Implementation of stack, Operations on stack: Push & Pop, Array representation of Stack, Linked representation of Stack, Operation associated with stacks, Application on stack: Conversion of Infix to Prefix and Postfix Expressions, Evaluation of Postfix expression using stack.
Queues: Array and linked representation and implementation of queues, Operations on Queue: Create, Add, Delete, Full and Empty. Circular queue, Deque and Priority Queue.

UNIT III

Linked List: Representation and Implementation of Singly Linked List, Two-way Header List, Traversing and Searching of Linked List, Overflow and Underflow, Insertion and Deletion to/from Linked List, Insertion and Deletion Algorithms, Doubly linked List, Linked List in Array, Polynomial representation and addition, Generalized linked list, Garbage Collection and Compaction.

UNIT IV

Trees: Basic terminology, Binary Trees, Binary Tree Representation, Algebraic Expressions, Complete Binary Tree. Extended Binary Trees, Array and Linked representation of Binary trees, Traversing Binary trees.
Binary Search Tree: Binary Search Tree (BST), Insertion and Deletion in BST, Complexity of search algorithm, Path Length, AVL Tree, B-trees.

UNIT V

Searching and Hashing: Sequential Search, Comparison and Analysis, Hash table, Hash Functions, Collision Resolution Strategies, Hash Table Implementation.
Sorting: Insertion Sort, Bubble Sorting, Quick Sort, Two way Merge Sort, Heap Sort, Sorting on Different Keys, Practical consideration for Internal Sorting.
File Structures: Physical Storage Media File Organization, Organization of records into Blocks, Sequential Files, Indexing and Hashing, Primary indices, Secondary indices, B+ Tree index Files, B Tree index Files, Indexing and Hashing Comparisons.

References

1. Horowitz and Sahani, Fundamentals of Data Structure, Galgotia.
2. R.Kruse etal, Data Structures and Program Design in C, Pearson Education.
3. A M Tenenbaum etal, Data Structure using C & C++, PHI.
4. Lipschutz, Data Structure, TMH.
5. K. Loudon, Mastering Algorithms with C, Sheoff Publisher & Distributors.
6. Bruno R Preiss, Data Structures and Algorithms with Object Oriented Design Pattern in C++, John Wiley & Sons, Inc.
7. Yashwant Kanetkar, Pointers in C, BPB

Revised syllabus (Effective from the session 2011-12)

EMA 301
ENGINEERING MATHEMATICS – III

MM : 100 **Sessional : 30**
Time : 3 Hr **ESE : 70**
L T P **Pass Marks : 40**
3 1 0

NOTE : Ten questions are to be set taking two questions from each unit. The student has to attempt FIVE questions selecting one question from each unit. The previous year papers / model paper can be used as a guideline and the following syllabus should be strictly followed while setting the question paper.

UNIT I

Laplace Transform: Laplace transform of elementary functions. Shifting theorems. Transform of derivatives. Differentiation and Integration of transforms. Heaviside unit step and Dirac Delta functions. Convolution theorem. Solution of ordinary linear differential equations used in Mechanics, Electric circuits and Bending of beams.

UNIT II

Fourier Transforms : Definition of Fourier transform, Fourier sine and cosine transforms. Fourier integral formula. Applications to solutions of boundry value problems.

UNIT III

Z - transform : Definition, Linearity property, Z - transform of elementary functions, Shifting theorems, Initial and final value theorem, Convolution theorem, Inversion of Z - transforms, Solution of difference equations by Z - transforms.

UNIT IV

Functions of a Complex Variable - I : Analytic functions, C-R equations and harmonic functions, Line integral in the complex plane, Cauchy's integral theorem, Cauchy's integral formula for derivatives of analytic functions, Liouville's theorem.

UNIT V

Functions of a Complex Variable - II : Representation of a function by power series, Taylor's and Laurent's series, Singularities, zeroes and poles, Residue theorem, evaluation of real integrals of type $\int_{o}^{2\pi} f(\cos\theta, \sin\theta)d\theta$ and $\int_{-\infty}^{\infty} f(x)/F(x)dx$, Conformal mapping and bilinear transformations.

References

1. Prasad C., Advanced mathematics for Engineers, Prasad Mudranalaya
2. Schaum outline Series, Integral Transform,TMH
3. Grewal B.S., Higher Engineering Mathematics, Khanna, New Delhi, 2000
4. Brancewel, Fourier Transforms and their applications, McGraw
5. Kreyszig E., Advanced Engineering Mathematics, John Wiley, New York, 1999

Revised syllabus (Effective from the session 2011-12)

ECS 302
COMPUTER ORGANIZATION

MM : 100 **Sessional : 30**
Time : 3 Hr **ESE : 70**
L T P **Pass Marks : 40**
3 1 0

NOTE : Ten questions are to be set taking two questions from each unit. The student has to attempt FIVE questions selecting one question from each unit. The previous year papers / model paper can be used as a guideline and the following syllabus should be strictly followed while setting the question paper.

UNIT I

Register Transfer Language, Bus and Memory Transfers, Bus Architecture, Bus Arbitration, Arithmetic Logic, Shift Micro-operation, Arithmetic Logic Shift Unit, Arithmetic Algorithms (addition, subtraction, Booth's Multiplication), IEEE standard for Floating point numbers.

UNIT II

Control Design: Hardwired & Micro Programmed Control Unit, Fundamental Concepts (Register Transfers, Performing of arithmetic or logical operations, Fetching a word from memory, storing a word in memory), Execution of a complete instruction, Multiple-Bus organization, Microinstruction, Microprogram sequencing, Wide-Branch addressing, Microinstruction with Next-address field, Prefetching Microinstruction.

UNIT III

Processor Design: Processor Organization: General register organization, Stack organization, Addressing mode, Instruction format, Data transfer & manipulations, Program Control, Reduced Instruction Set Computer (RISC), Complex Instruction Set Computer (CISC).

UNIT IV

Input-Output Organization: I/O Interface, Modes of transfer, Interrupts & Interrupt handling, Direct Memory access, Input-Output processor, Serial Communication.

UNIT V

Memory Organization: Memory Hierarchy, Main Memory (RAM and ROM Chips), organization of 2D, Auxiliary memory, Cache memory, Virtual Memory, Memory management hardware.

References

1. M. Mano, Computer System Architecture, PHI
2. Vravice, Zaky & Hamacher, Computer Organization, TMH Publication
3. Tannenbaum, Structured Computer Organization, PHI
4. Stallings, Computer Organization, PHI
5. John P.Hayes, Computer Organization, McGraw Hill

Revised syllabus (Effective from the session 2011-12)

EEC 302/ EEC 506
DIGITAL ELECTRONICS

MM : 100 **Sessional : 30**
Time : 3 Hr **ESE : 70**
L T P **Pass Marks : 40**
3 1 0

NOTE : Ten questions are to be set taking two questions from each unit. The student has to attempt FIVE questions selecting one question from each unit. The previous year papers / model paper can be used as a guideline and the following syllabus should be strictly followed while setting the question paper.

UNIT I

Number System: Representation of negative numbers, 9's and 1's complement, 10's and 2's complement, arithmetic using 2's complement. BCD Code, Gray Code, Excess-3 Code, Introduction to Boolean algebra, Truth table verification of various gates, Realization of Switching functions with gates.

UNIT II

K- Map: Representation up to 4 variables, simplification and realization of various functions using gates, Tabular Method, Combinational logic and design procedure.

UNIT III

Combinational Logic Circuits: Arithmetic circuits, Half and Full adder, Subtractors, BCD adders, Code Conversion, 4 bit Magnitude Comparator (IC -7485), Cascading of IC 7485, Decoder, Multiplexer, Demultiplexers, Encoders.

UNIT IV

Sequential Logic Circuits: Flip Flops, S-R latch, gated latches, Edge triggered Flip Flops, Master-slave Flip Flops, Conversion of flip flops, Analysis of clocked sequential circuits, Design of synchronous circuits, State transition diagram, state reduction and assignment.

UNIT V

Counters: Design of Asynchronous and Synchronous Counters, Two bits & four bits up & down counters and their design, Shift registers, Serial & Parallel data transfer, Shift left/Right register, Shift Register applications.

Text Book

M.Morris Mano, Digital Design, PHI

Reference Books

1. R.P.Jain, Modern Digital electronics, TMH
2. A.Anand Kumar, Fundamentals of Digital Circuits, PHI
3. Lee S.C, Modern Switching Theory and Digital design, PHI
4. Greenfield J.D., Practical Digital design using ICs, John Wiley.

Revised syllabus (Effective from the session 2011-12)

ECS 303
SYSTEM ANALYSIS AND DESIGN

MM : 100 **Sessional : 30**
Time : 3 Hr **ESE : 70**
L T P **Pass Marks : 40**
3 1 0

NOTE : Ten questions are to be set taking two questions from each unit. The student has to attempt FIVE questions selecting one question from each unit. The previous year papers / model paper can be used as a guideline and the following syllabus should be strictly followed while setting the question paper.

UNIT I

Introduction: System definition and concepts - Characteristics and types of system, Manual and automated systems. Real-life Business sub-systems - Production, Marketing, Personal, Material, Finance. Systems models types of models - Systems environment and boundaries, Real-time and distributed systems, Basic principles of successful systems.
Systems Analyst: Role and need of systems analyst ,Qualifications and responsibilities ,Systems Analyst as and agent of change,

UNIT II

System Development Cycle : Introduction to systems development life cycle (SDLC), Various phases of development - Analysis, Design, Development, Implementation, Maintenance, Systems documentation considerations - Principles of systems documentation , Types of documentation and their importance,Enforcing documentation discipline in an organization .
System Planning: Data and fact gathering techniques: Interviews, Group communication, Presentations, Site visits. Feasibility study and its importance, Types of feasibility reports System Selection plan and proposal Prototyping. Cost-Benefit and analysis - Tools and techniques

UNIT III

Systems Design and Modeling: Process modeling, Logical and physical design, Design representation, Systems flowcharts and structured charts , Data flow diagrams , Common diagramming conventions and guidelines using DFD and ERD diagrams. Data Modeling and systems analysis , Designing the internals: Program and Process design ,Designing Distributed Systems.
Input and Output: Classification of forms - Input/output forms design, User-interface design, Graphical interfaces.

UNIT IV

Modular and structured Design : Module specifications ,Module coupling and cohesion , Top-down and bottom-up design.
System Implementation and Maintenance : Planning considerations, Conversion methods, producers and controls, System acceptance Criteria, System evaluation and performance, Testing and validation, Systems qualify Control and assurance, Maintenance activities and issues.

UNIT V

System Audit and Security : Computer system as an expensive resource- Data and Strong media, Procedures and norms for utilization of computer equipment, Audit of computer system usage, Audit trails. Types of threats to computer system and control measures - Threat to computer system and control measures, Disaster recovery and contingency planning

Object Oriented Analysis and design : Introduction to Object Oriented Analysis and design life cycle, object modeling: Class Diagrams, Dynamic modeling: state diagram, Dynamic modeling: sequence diagramming.

References

1. Whitten, Bentaly and Barlow, System Analysis and Design Methods, Galgotia Publication.
2. Elias M. Award, System Analysis and Design, Galgotia Publication
3. Jeffrey A. Hofer Joey F. George Joseph S. Valacich, Modern System Analysis and Design, Addison Weseley.

Revised syllabus (Effective from the session 2011-12)

EEE 302 / EEE 403
NETWORK ANALYSIS AND SYNTHESIS

MM : 100 **Sessional : 30**
Time : 3 Hr **ESE : 70**
L T P **Pass Marks : 40**
3 1 0

NOTE : Ten questions are to be set taking two questions from each unit. The student has to attempt FIVE questions selecting one question from each unit. The previous year papers / model paper can be used as a guideline and the following syllabus should be strictly followed while setting the question paper.

UNIT I

Graph Theory : Graph of a Network, definitions, tree, co tree , link, basic loop and basic cut set, Incidence matrix, cut set matrix, Tie set matrix Duality, Loop and Node methods of analysis.

UNIT II

Network Theorems: Applications to ac networks- Super-position theorem, Thevenin's theorem, Norton's theorem, maximum power transfer theorem, Reciprocity theorem. Millman's theorem, compensation theorem, Tellegen's theorem.

UNIT III

Network Functions: Concept of Complex frequency , Transform Impedances Network functions of one port and two port networks, concept of poles and zeros, properties of driving point and transfer functions, time response and stability from pole zero plot, frequency response and Bode plots.

UNIT IV

Two Port Networks: Characterization of LTI two port networks ZY, ABCD and h parameters, reciprocity and symmetry. Inter-relationships between the parameters, inter-connections of two port networks, Ladder and Lattice networks. T and Π Representation.

UNIT V

Network Synthesis: Positive real function; definition and properties; properties of LC, RC and RL driving point functions, synthesis of LC, RC and RL driving point immittance functions using Foster and Cauer first and second forms.

Filters: Image parameters and characteristics impedance, passive and active filter fundamentals, low pass, high-pass, band pass, band elimination filters.

Text Books

1. M.E. Van Valkenburg, Network Analysis, Prentice Hall of India.
2. D. Roy Chaudhary, Networks and Systems, Wiley Eastern Ltd.
3. Donald E. Scott, An Introduction to Circuit analysis: A System Approach, McGraw Hill Book Company.

Reference Books

1. M.E. Van Valkenburg, An Introduction to Modern Network Synthesis, Wiley Eastern Ltd.
2. W.H. Hayt & Jack E-Kemmerly, Engineering Circuit analysis, Tata McGraw Hill.
3. Soni, Gupta , Circuit Analysis, Dhanpat Rai & Sons.
4. A. Chakrabarti, Circuit Theory, Dhanpat Rai & Co.

Revised syllabus (Effective from the session 2011-12)

ECS 351/ ECS 454
DATA STRUCTURE LAB

MM : 50 **Sessional : 15**
Time : 2Hr **ESE : 35**
L T P **Pass Marks : 20**
0 0 2

Write Program in C

1. Array implementation of Stack.
2. Array implementation of Queue.
3. Array implementation of Circular Queue.
4. Implementation of Linked List.
5. Implementation of Stack using list.
6. Implementation of Queue using list.
7. Implementation of Binary Search Tree, Tree Traversal.
8. Insertion and Deletion in BST.
9. Implementation of Searching and Sorting Algorithms.
10. Sort a double linked list.

NOTE

1. Each experiment shall carry 20 marks and 15 marks shall be reserved for viva-voce examination.
2. In practical examination the student shall be required to perform one experiment.
3. A teacher shall be assigned 20 students for daily practical work in laboratory.
4. No batch for practical class shall consist of more than 20 students.
5. The number of students in a batch allotted to an examiner for practical examination shall not exceed 20 students.
6. Addition/deletion in above list may be made in accordance with the facilities available with the approval of H.O.D./Dean.

Revised syllabus (Effective from the session 2011-12)

EHU 351 / EHU 551 / EHU 651
TECHNICAL COMMUNICATION LAB

MM : 50 **Sessional : 15**
Time : 2Hr **ESE : 35**
L T P **Pass Marks : 20**
0 0 2

Interactive and Communicative Practical with emphasis on Oral Presentation/Spoken Communication

LIST OF PRACTICALS

1. Group Discussion: Practical based on Accurate and Current Grammatical Patterns.
2. Conversational Skills for Interviews under suitable Professional Communication Lab conditions with emphasis on Kinesics.
3. Communication Skills with emphasis on Paralinguistics/Kinesics.
4. Presentation Skills based on proper Stress and Intonation Mechanics.
5. Official/Public Speaking based on suitable Rhythmic Patterns.
6. Argumentative Skills/Role Play Presentation with Stress and Intonation.
7. Comprehension Skills based on Reading and Listening Practical on a model Audio-Visual Usage.
8. Word formation, Synonyms and Antonyms, Homophones
9. Selection of vocabulary of about 100-200 New words;

RECOMMENDED BOOKS

Agarwal, S K. & Singh, *P K. Effective Business Communication.* New Delhi: Himanshu publications.
Balasubramaniam, T. *Phonetics for Indian Students*. Macmillan India Ltd.
Krishnaswamy, N. "*Modern English*. Macmillan India Ltd.
Koneru, Aruna. Professional Communication. New Delhi: Tata Mc Graw-Hill Publishing Company Ltd.
Mohan, Krishna & Banerji, Meera. *Developing Communication Skill*. Macmillan India Ltd.
Pandey, L.U.B. & Singh, R.P. *A Manual of Practical Communication*. A.I.T.B.S. Pub. India Ltd. Krishan Nagar, Delhi.
Rizvi, M Ashraf. *Effective Technical Communication*. New Delhi: Tata Mc Graw-Hill Publishing Company Ltd.

DICTIONARIES

Daniel, Jones. *English Pronouncing Dictionary*. Cambridge University Press.
Oxford Advanced Learners' Dictionary.
Longman's Dictionary of Contemporary English

NOTE

1. Each experiment shall carry 20 marks and 15 marks shall be reserved for viva-voce examination.
2. In practical examination the student shall be required to perform one experiment.
3. A teacher shall be assigned 20 students for daily practical work in laboratory.
4. No batch for practical class shall consist of more than 20 students.
5. The number of students in a batch allotted to an examiner for practical examination shall not exceed 20 students.
6. Addition/deletion in above list may be made in accordance with the facilities available with the approval of H.O.D./Dean.

Revised syllabus (Effective from the session 2011-12)

ECS 352
COMPUTER ORGANIZATION LAB

MM : 50 **Sessional : 15**
Time : 2Hr **ESE : 35**
L T P **Pass Marks : 20**
0 0 2

Perform Following

1. Identification of various components of computers.
2. Inter transfer of data among four 7495 registers through a common bus – implementation on Bread Board.
3. Creating and rectifying the common faults occurring in a computer system – implementation on computer system kit.

NOTE

1. Each experiment shall carry 20 marks and 15 marks shall be reserved for viva-voce examination.
2. In practical examination the student shall be required to perform one experiment.
3. A teacher shall be assigned 20 students for daily practical work in laboratory.
4. No batch for practical class shall consist of more than 20 students.
5. The number of students in a batch allotted to an examiner for practical examination shall not exceed 20 students.
6. Addition/deletion in above list may be made in accordance with the facilities available with the approval of H.O.D./Dean.

Revised syllabus (Effective from the session 2011-12)

EEC 352
DIGITAL ELECTRONICS LAB

MM : 50 **Sessional : 15**
Time : 2Hr **ESE : 35**
L T P **Pass Marks : 20**
0 0 2

LIST OF EXPERIMENTS

1. To verify the truth tables of various types of gates using IC 7400.
2. To verify the truth tables of Multiplexer & also implement a function using Multiplexer.
3. To design & verify the truth table of half & full adder.
4. To design & verify the truth table SR flip-flop using NOR/NAND gates.
5. To design & verify the truth table JK flip-flop using NOR/NAND gates.
6. To design & study Counters .
7. To design & study Shift registers.
8. To verify the truth tables of de Multiplexer.

NOTE

1. Each experiment shall carry 20 marks and 15 marks shall be reserved for viva-voce examination.
2. In practical examination the student shall be required to perform one experiment.
3. A teacher shall be assigned 20 students for daily practical work in laboratory.
4. No batch for practical class shall consist of more than 20 students.
5. The number of students in a batch allotted to an examiner for practical examination shall not exceed 20 students.
6. Addition/deletion in above list may be made in accordance with the facilities available with the approval of H.O.D./Dean.

Revised syllabus (Effective from the session 2011-12)

ECS 401
SOFTWARE ENGINEERING

MM : 100 **Sessional : 30**
Time : 3 Hr **ESE : 70**
L T P **Pass Marks : 40**
3 1 0

NOTE: Ten questions are to be set taking two questions from each unit. The student has to attempt FIVE questions selecting one question from each unit. The previous year papers / model paper can be used as a guideline and the following syllabus should be strictly followed while setting the question paper.

UNIT I

Software engineering paradigms, waterfall life cycle model, spiral model, prototype model, 4th generation techniques, planning, cost estimation, Organization structure, software project scheduling, Risk analysis and Management, requirements and specifications, Rapid prototyping.

UNIT II

Abstraction, modularity, software architecture, cohesion, coupling, various design concepts and notations, Real time and Distributed system design, documentation, data flow oriented design, Jackson system development, Design for reuse, programming standards.

UNIT III

Scope and classification of metrics, measuring process and product attributes, direct and indirect measures, Reliability, Software quality assurance, Standards

UNIT IV

Software testing fundamentals, Software testing strategies, Black box testing, white-box testing, System Testing and other testing techniques, Testing tools, test case management, software maintenance organization, maintenance report, types of maintenance.

UNIT V

Need for SCM, version control, SCM process, Software configuration items, taxonomy, CASE repository, Features.

References

1. Roger S. Pressman, Software Engineering: A Practioner Approach, 5th edition, Mc Graw Hill, 1999.
2. Fairley , Software Engineering Concepts, Mc Graw Hill, 1985
3. Sommervile I., Software Engineering, 5th edition, Addison Wesley, 1996
4. David Gustafson, Software Engineering, Schaum's outlines, Tata McGraw-Hill, 2003

Revised syllabus (Effective from the session 2011-12)

EMA 401
DISCRETE MATHEMATICS

MM : 100 **Sessional : 30**
Time : 3 Hr **ESE : 70**
L T P **Pass Marks : 40**
3 1 0

NOTE: Ten questions are to be set taking two questions from each unit. The student has to attempt FIVE questions selecting one question from each unit. The previous year papers / model paper can be used as a guideline and the following syllabus should be strictly followed while setting the question paper.

UNIT I

Sets and Propositions : Introduction. Combination of sets, Finite and Infinite sets, Uncountably Infinite sets, Mathematical Induction, Principle of Inclusion and Exclusion. Propositions.

UNIT II

Relations and Functions : Introduction. Relation, Properties of primary relations, Equivalence relations and partitions, Partial ordering relations and lattices. Functions and the Pigeonhole principle.

UNIT III

Graphs and Planar Graphs : Basic terminology, Multigraphs and weighted graphs, Paths and circuits, Shortest paths in weighted graphs. Eulerian Paths and circuits, Hamiltonian paths and circuits, Planar Graphs.

UNIT IV

Trees and Cut Sets : Trees, Rooted trees, Path lengths in rooted trees, Prefix codes, Spanning trees and cut sets. Minimum spanning trees.

UNIT V

Generating Functions and Recurrence Relations : Introduction. Manipulation of numeric Functions, Generating functions, Recurrence relations, Linear Recurrence relations with constant coefficients. Homogeneous solutions, Particular solutions, Total solutions. Solution by the method of generating functions.

References

1. Kenneth H. Rosen, “Discrete Mathematics and its applications”, McGraw Hill.
2. Liu,C.L(2/e)., Elements of Discrete Mathematics, TMH, New Delhi, 2000
3. Tremblay J.P. and Manohar R., Discrete Mathematical structures with application to Computer Science, McGraw, Singapore, 1988
4. Kolman & Busby(3/e), Discrete Mathematical structures for Computer Science, PHI, New Delhi, 2001

Revised syllabus (Effective from the session 2011-12)

ECS 402
OPERATING SYSTEM

MM : 100 **Sessional : 30**
Time : 3 Hr **ESE : 70**
L T P **Pass Marks : 40**
3 1 0

NOTE: Ten questions are to be set taking two questions from each unit. The student has to attempt FIVE questions selecting one question from each unit. The previous year papers / model paper can be used as a guideline and the following syllabus should be strictly followed while setting the question paper.

UNIT I

Introduction : Mainframe Systems, Desktop Systems, Multiprocessor Systems, Distributed Systems, Clustered Systems, Real Time Systems, Hardware Protection, System Components, Handheld Systems, Operating System Services, System Calls, System Programs, System Structure, Visual Machines, System Design and Implementation.

UNIT II

Process Management : Process Concept, Process Scheduling, Operation on Process, Cooperating Processes, Interprocess Communication, Threads, Overview – Multithreading Models, Process Synchronization, The Critical Section Problem, Synchronization Hardware, Semaphores, Classical Problems of Synchronization, Deadlocks, System Model, Deadlock Characterization, Methods for handling Deadlocks, Deadlock Prevention, Deadlock Avoidance, Deadlock Detection, Recovery from Deadlock

UNIT III

CPU Scheduling And Memory Management : CPU Scheduling, Basic Concepts, Scheduling Criteria, Scheduling Algorithms, Multiple Processor Scheduling, Real Time Scheduling, Algorithm Evaluation, Memory Management Background, Swapping, Contiguous Memory Allocation, Paging, Segmentation, Segmentation with paging.

UNIT IV

Virtual Memory : Virtual Memory, Demand paging, Page Replacement, Thrashing, Allocation of Frames, Other Considerations, File Systems, File Concepts, Access Methods, Directory Structure, File System Mounting, File Sharing, Protection, File System Structure, File System Implementation, Recovery.

UNIT V

Files And Secondary Storage Management : Allocation Methods, Free Space Management, Directory Implementation, Recovery, Disk Structure, Disk Scheduling, Disk Management, Swap Space management, Case Study: Linux System, Components of a Linux Systems, Process Management, Process Scheduling, Security.

References

1. Silberschatz , Galvin, Gagane, Operating System Concepts , Sixth edition, John wile & Sons, INC, 2002.
2. D.M.Dhamdhere, Operating Systems, Tata McGraw Hill, 2002.
3. Charles Crowley, Operating Systems: A Design Oriented Approach, Tata McGraw Hill, 1999.
4. Andrew S.Tanenbaum, Modern Operating Systems, Prentice Hall of India,1995. William Stallings, Operating Systems, Prentice Hall of India, 1997.

Revised syllabus (Effective from the session 2011-12)

EMA 402
NUMERICAL ANALYSIS

MM : 100 **Sessional : 30**
Time : 3 Hr **ESE : 70**
L T P **Pass Marks : 40**
3 1 0

NOTE: Ten questions are to be set taking two questions from each unit. The student has to attempt FIVE questions selecting one question from each unit. The previous year papers / model paper can be used as a guideline and the following syllabus should be strictly followed while setting the question paper.

UNIT I

Errors and Roots of Equations : Absolute, relative, round-off and truncation errors. Significant digits. Algebraic and Transcendental Equations, Numerical solution, Method of bisection, Newton-Raphson method, Direct iterative method, convergence.

UNIT II

Linear Simultaneous Algebric Equations : Method of Gauss elemination, LU - decomposition Jacobi's and Gauss- Seidal methods, Largest eigen value and corresponding eigen vector (Powers method).

UNIT III

Interpolation : Finite difference operators, Greogory- Newton, Stirling, Bessel and Lagrange's formula. Errors in interpolation. Divided differences.

UNIT IV

Numerical Differentiation and Integration : Differentiation, Newton- Cotes formula of Inegration, Gaussian Quadrature formula. Extension of Trapezodial and Simpson's rules to multiple integration.

UNIT V

Ordinary Differential Equations : Picard, Taylor, Eulers, Runge-Kutta, Adams-Bash forth and Milne's method. System of ordinary differential equations, Partial Differential Equations: Numerical solutions of Laplace and Poisson equations by finite difference method.

References

1. Jain M.K, Iyengar S.R.K., Jain R.K., Numerical Methods for scientific & Engineering Computation, Wiley ,1987
2. Grewal, B.S., Numerical Methods in Engineering & Sciences, Khanna, New Delhi,
3. Sastry B., Introductory Method of Numerical Analysis, PHI
4. Flowers, Numerical Methods in C++, Oxford
5. Gerald C.F. (5/e), Applied Numerical Analysis, Addison Wesley, 1994

Revised syllabus (Effective from the session 2011-12)

ECS 403
ADVANCE DATA STRUCTURE

MM : 100 **Sessional : 30**
Time : 3 Hr **ESE : 70**
L T P **Pass Marks : 40**
3 1 0

NOTE: Ten questions are to be set taking two questions from each unit. The student has to attempt FIVE questions selecting one question from each unit. The previous year papers / model paper can be used as a guideline and the following syllabus should be strictly followed while setting the question paper.

UNIT I

Trees: Threaded Binary trees, Traversing Threaded Binary trees, recursive and non recursive traversal of binary tree, Efficient non recursive tree traversal algorithms, B+ Tree, B* Tree

UNIT II

Advanced Trees: Definitions Operations on Weight Balanced Trees (Huffman Trees),2-3 Trees and Red-Black Trees. Augmenting Red-Black Trees to Dynamic Order Statics and Interval Tree Applications. Operations on Disjoint sets and its union-find problem Implementing Sets. Dictionaries, Priority Queues and Concatenable Queues using 2-3 Trees.

UNIT III

Mergeable Heaps : Mergeble Heap Operations,Binomial Trees Implementing Binomial Heaps and its Operations, 2-3-4. Trees and 2-3-4 Heaps. Structure and Potential Function of Fibonacci Heap Implementing Fibonacci Heap.

UNIT IV

Graphs: Terminology & Representations, Graphs & Multi-graphs, Directed Graphs, Sequential Representations of Graphs, Adjacency Matrices, Traversal, Connected Component and Spanning Trees, Minimum Cost Spanning Trees. Definitions of Isomorphism Components.Circuits,Fundamental Circuits. Cut-Vertices Planer and Dual graphs,Spanning Trees

UNIT V

Graph Theory Algorithms : Algorithms for Connectness, Finding all Spanning Trees in a Weighted Graph and Planarity Testing Breadth First and Depth First Search, Topological Sort, Strongly Connected Components and Aritculation Point. Min-Cut Max-Flow theorem of Network Flows. Ford-Fulkerson Max Flow Algorithms.

References

1. Narsingh Deo-Graph, Theory with Application to Engineering and Computer Science,Prentice Hall of India.
2. Baase, Computer Algorithms, Pearson Education.
3. Cormen, Introduction to Algorithms,Prentice Hall of India.

Revised syllabus (Effective from the session 2011-12)

ECS 404/ECS 505
OBJECT ORIENTED PROGRAMMING USING C++

MM : 100 **Sessional : 30**
Time : 3 Hr **ESE : 70**
L T P **Pass Marks : 40**
3 1 0

NOTE: Ten questions are to be set taking two questions from each unit. The student has to attempt FIVE questions selecting one question from each unit. The previous year papers / model paper can be used as a guideline and the following syllabus should be strictly followed while setting the question paper.

UNIT I

Introduction: Review of C, Difference between C and C++, Cin, Cout, new ,delete operators, abstraction, encapsulation, inheritance, polymorphism, Structured versus object-oriented development, elements of object-oriented programming.

Class Overview: Class specification, class objects, accessing class members, defining member functions, outside member functions as inline, accessing member functions within a class, data hiding, access boundary of objects revisited, empty classes, pointers within a class, passing objects as arguments, returning objects from functions, friend functions and friend classes, constant parameters and member functions, structures and classes, static data and member functions, class, objects and memory resource, class design steps.

UNIT II

Object Initialization and Cleanup: Class revisited, constructors, parameterized constructors, destructor, constructor overloading, order of construction and destruction, constructors with default arguments, dynamic initialization through constructors, constructors with dynamic operations, copy constructor, static data members with constructors and destructors.

Operator Overloading: Introduction, over loadable operators, unary operator overloading, operator keyword, operator return values, limitations of increment/decrement operators, binary operator overloading, arithmetic operators, overloading of new and delete operators, data conversion, conversion between basic data types, conversion between objects and basic types, conversion between objects of different classes, overloading with friend functions.

UNIT III

Inheritance : Introduction, class revised, derived class declaration, forms of inheritance, inheritance and member accessibility, constructors in derived classes, destructors in derived classes, constructors invocation and data members initialization, overloaded member functions, multilevel inheritance, multiple inheritance, hierarchical inheritance, multi-path inheritance and virtual base classes, hybrid inheritance.

UNIT IV

Virtual Functions and Classes: Introduction, need for virtual functions, static and dynamic binding, pointer to derived class objects, definition of virtual functions, pure virtual functions, abstract classes, virtual destructors.

Generic Programming with Templates: Introduction, function templates, overloaded function templates, multiple arguments function templates, user defined template arguments, class templates, class template with overloaded operators.

UNIT V

Streams Computation with Streams: Predefined console streams, hierarchy of console stream classes, unformatted I/O operations, formatted console I/O operations, manipulators, custom/user-defined manipulators, stream operator with user-defined classes.

Stream Computation with Files: Introduction, hierarchy of file stream classes, opening and closing of files, testing for errors, file modes, file pointers and their manipulators, sequential access to a file, ASCII and binary files, saving and retrieving of objects, file input/output with stream class, random access to a file, in-memory buffers and data formatting, error handling during file manipulations, filter utilities.

Exception Handling: Introduction, error handling, exception handling model, exception handling constructs.

References

1. E.Balagurusamy, Object Oriented Programming with C++, TMH
2. R.Lafore, Object Oriented Programming using C++, Galgotia
3. S.B.Lippman & J.Lajoie, C++ Primer, Addison Wesley
4. G.Booch, Object Oriented Design & Applications, PHI

Revised syllabus (Effective from the session 2011-12)

ECS 451
ADVANCE DATA STRUCTURE LAB

MM : 50 **Sessional : 15**
Time : 2Hr **ESE : 35**
L T P **Pass Marks : 20**
0 0 2

Write Program in C

1. Implementation of Weighted Balanced Trees.
2. Implementation of Red-Black Tree.
3. Implementation of Threaded Binary Tree and there Traversal.
4. Implementation of Priority Queue.
5. Implementation of Heap Tree.
6. Implementation of Graphs.
7. Implementation of Depth First Search.
8. Implementation of Breadth First Search.
9. Implementation of Hashing.
10. Graph Implementation Min. cost spanning tree, shortest path algorithm.

NOTE

1. Each experiment shall carry 20 marks and 15 marks shall be reserved for viva-voce examination.
2. In practical examination the student shall be required to perform one experiment.
3. A teacher shall be assigned 20 students for daily practical work in laboratory.
4. No batch for practical class shall consist of more than 20 students.
5. The number of students in a batch allotted to an examiner for practical examination shall not exceed 20 students.
6. Addition/deletion in above list may be made in accordance with the facilities available with the approval of H.O.D./Dean.

Revised syllabus (Effective from the session 2011-12)

ECS 452/ECS 554
OBJECT ORIENTED PROGRAMMING LAB

MM : 50 **Sessional : 15**
Time : 2Hr **ESE : 35**
L T P **Pass Marks : 20**
0 0 2

Programming exercise on the following topics.

Functions in C++, parameter passing, call and return by reference, friend functions, inline functions, function overloading.

Classes and objects: arrays within a class, memory allocation for objects, static members, returning objects, constructor and destructors, operator overloading.

Inheritance: derived classes, single and multiple inheritance, hierarchical inheritance, constructors in derived classes, classes containing objects of other classes.

Polymorphism: pointers to objects, this pointer, pointer to derived classes, virtual functions.

Templates: class and function templates, template arguments, exception handling; use of files, learning to use Visual C++ environment.

NOTE

1. Each experiment shall carry 20 marks and 15 marks shall be reserved for viva-voce examination.
2. In practical examination the student shall be required to perform one experiment.
3. A teacher shall be assigned 20 students for daily practical work in laboratory.
4. No batch for practical class shall consist of more than 20 students.
5. The number of students in a batch allotted to an examiner for practical examination shall not exceed 20 students.
6. Addition/deletion in above list may be made in accordance with the facilities available with the approval of H.O.D./Dean.

Revised syllabus (Effective from the session 2011-12)

EMA 452
NUMERICAL ANALYSIS LAB

MM : 50 **Sessional : 15**
Time : 2Hr **ESE : 35**
L T P **Pass Marks : 20**
0 0 2

List of Experiment :

Roots of Algebraic and transcendental equations

1. Bisection method
2. Newton Raphson method
3. Direct iterative method

Solutions of simultaneous equations-

4. Gauss Elimination method
5. LU – Decomposition method
6. Jacobi method
7. Gauss Seidel method

Interpolation

8. Lagrange's Interpolation method
9. Newton Forward's interpolation method and Newton Backward's interpolation method

Numerical differentiation and integration

10. first and second order differential coefficient
11. Trapezoidal formula composite
12. Simpson's 1/3 formula composite
13. Simpson's 3/8 formula
14. Lagendre Gaussian Quadrature

Solution of differential equations

15. Picards method
16. Euler's method
17. Runge-Kutta method
18. Milne's method

Statistics

19. Method of least square curve fitting
20. Regression analysis
21. Linear square fit and polynomial fit.

NOTE

1. Each student shall be required to execute two programs in the practical examination.
2. 20 marks shall be assigned for programming and 15 marks for viva-voce examination.
3. A teacher shall be assigned 20 students for daily practical work in laboratory.
4. No batch for practical class shall consist of more than 20 students.
5. The number of students in a batch allotted to an examiner for practical examination shall not exceed 20 students.
6. Addition/deletion in above list may be made in accordance with the syllabus by the permission of H.O.D./Dean.

Revised syllabus (Effective from the session 2011-12)

ECS 460
SEMINAR

MM : 50 **Sessional :50**
L T P **ESE: 0**
0 0 2 **Pass Marks : 20**

Objective: To increase the communication ability on students and to prepare then for presenting seminar on advanced topics of their branch.

The students will be required to deliver a seminar on a topic of general interest in or any advanced technical topics related to the theory papers studied. The topic will be decided by mutual consent of the Faculty- in- charge and students.

* Total 50 marks include 25 marks for report and 25 marks for presentation

Revised Syllabus (Effective from the session 2012-13)

Gurukula Kangri Vishwavidyalaya, Haridwar
Faculty of Engineering & Technology
Computer Science & Engineering

B.Tech. III Year

Semester - V

S.N.	Course Code	Subject	Periods			Evaluation Scheme				Subject Total
						Sessional Exam			EXAM ESE	
			L	T	P	CT	TA	Total		
THEORY										
1.	ECS501	Core Java	3	1	0	20	10	30	70	100
2.	EHU501/ EHU601	Industrial Economics & Business Administration	3	1	0	20	10	30	70	100
3.	ECS502	System Software	3	1	0	20	10	30	70	100
4.	EEC505/ EEC402/ EEC605	Microprocessor and Microcontroller	3	1	0	20	10	30	70	100
5.	ECS503	Computer Graphics	3	1	0	20	10	30	70	100
6.	ECS504	Database Management System	3	1	0	20	10	30	70	100
PRACTICAL										
7.	ECS551	Java Programming Lab	0	0	2	0	15	15	35	50
8.	EEC553/ EEC451/ EEC654	Microprocessor and Microcontroller Lab	0	0	2	0	15	15	35	50
9.	ECS552	Computer Graphics Lab	0	0	2	0	15	15	35	50
10.	ECS553	DBMS Lab	0	0	2	0	15	15	35	50
		TOTAL	18	6	8	120	120	240	560	800

L- LECTURE; T- TUTORIAL; P- PRACTICAL;
CT-CUMULATIVE TEST; TA- TEACHER ASSESSMENT; ESE–END SEMESTER EXAMINATION

Revised Syllabus (Effective from the session 2012-13)

Gurukula Kangri Vishwavidyalaya, Haridwar
Faculty of Engineering & Technology
Computer Science & Engineering

B.Tech. III Year

Semester - VI

S.N.	Course Code	Subject	Periods			Evaluation Scheme				Subject Total
						Sessional Exam			EXAM ESE	
			L	T	P	CT	TA	Total		
THEORY										
1.	ECS601	Theory of Automata and Formal Languages	3	1	0	20	10	30	70	100
2.	ECS602	Advance Java	3	1	0	20	10	30	70	100
3.	ECS603	Design & Analysis of Algorithms	3	1	0	20	10	30	70	100
4.	ECS604/ ECS705	Computer Network	3	1	0	20	10	30	70	100
5.	ECS605	Artificial Intelligence	3	1	0	20	10	30	70	100
6.	ECS606	.net Technologies	3	1	0	20	10	30	70	100
PRACTICAL										
7.	ECS651	Advance Java Lab	0	0	2	0	15	15	35	50
8.	ECS652	.net Technologies Lab	0	0	2	0	15	15	35	50
9.	ECS660	'C' Project Lab	0	0	2	0	30	30	70	100
		TOTAL	18	6	6	120	120	240	560	800

L- LECTURE; T- TUTORIAL; P- PRACTICAL;
CT-CUMULATIVE TEST; TA- TEACHER ASSESSMENT; ESE–END SEMESTER EXAMINATION

Revised syllabus (Effective from the session 2012-13)

ECS 501
CORE JAVA

MM : 100 **Sessional : 30**
Time : 3 Hr **ESE : 70**
L T P **Pass Marks : 40**
3 1 0

NOTE : Ten questions are to be set taking two questions from each unit. The student has to attempt FIVE questions selecting one question from each unit. The previous year papers / model paper can be used as a guideline and the following syllabus should be strictly followed while setting the question paper.

UNIT I

Introduction : Creation of Java, importance of Java to internet, byte code, OOP Principles, Encapsulation, Inheritance and Polymorphism, data types, variables, declaring variables, dynamic initialization, scope and life time of variables, arrays, operators, control statements, type conversion and casting, compiling and running of simple Java program.

Classes and Objects : Concepts of classes and objects, class fundamentals Declaring objects, assigning object reference variables, introducing methods,constructors, usage of static with data and methods, usage of final with data, access control, this key word, garbage collection, overloading methods and constructors, parameter passing – call by value, recursion,nested classes and inner classes, exploring the String class.

UNIT II

Inheritance : Basic concepts, member access rules, usage of super key word, forms of inheritance, method overriding, abstract classes, dynamic method dispatch, using final with inheritance, the Object class.

Packages and Interfaces : Defining, Creating and Accessing a Package, Understanding classpath, importing packages, differences between classes and interfaces, defining an interface, implementing interface, applying interfaces, variables in interface and extending interfaces.

UNIT III

Exception Handling and Multithreading : Concepts of Exception handling, types of exceptions, usage of try, catch, throw, throws and finally keywords, Built-in exceptions, creating own exception sub classes, Concepts of Multithreading, differences between process and thread, thread life cycle,creating multiple threads using Thread class, Runnable interface, Synchronization, thread priorities, inter thread communication, daemon threads,deadlocks, thread groups.

UNIT IV

Applets : Concepts of Applets, differences between applets and applications,life cycle of an applet, types of applets, creating applets, passing parameters to applets.

Event Handling : Events, Event sources, Event classes, Event Listeners, Delegation event model, handling mouse and keyboard events, Adapter classes.

UNIT V

AWT : Concepts of components, container, panel, window, frame, canvas, AWT Controls - Buttons, Labels, Text fields, Text area, Check boxes, Check box groups, Lists, Choice, Scrollbars, Menus, Layout Managers – Flow, Border,Grid.
Swing : JApplet, JFrame and JComponent, Icons and Labels, Handling threading issues, text fields, Buttons – The JButton class, Check boxes, Radio buttons, Combo boxes, Tabbed Panes, Scroll Panes, Trees, and Tables.

References

1. Herbert Schildt, The Complete Reference Java J2SE 5th Edition, TMH Publishing Company Ltd.
2. Cay Horstmann, ig Java 2nd Edition, John Wiley and Sons.
3. H.M.Dietel and P.J.Dietel, Java How to Program, Pearson Education/PHI
4. Cay.S.Horstmann and Gary Cornell, Core Java 2, Vol 1, Fundamentals, Pearson Education.
5. Cay.S.Horstmann and Gary Cornell, Core Java 2- Advanced Features, Pearson Education.
6. Iver Horton, Beginning in Java 2, Wrox Publications.

Revised syllabus (Effective from the session 2012-13)

EHU 501/EHU 601
INDUSTRIAL ECONOMICS AND BUSINESS ADMINISTRATION

MM : 100 **Sessional : 30**
Time : 3 Hr **ESE : 70**
L T P **Pass Marks : 40**
3 1 0

NOTE : Ten questions are to be set taking two questions from each unit. The student has to attempt FIVE questions selecting one question from each unit. The previous year papers / model paper can be used as a guideline and the following syllabus should be strictly followed while setting the question paper.

UNIT I

Industrial Economics: Elasticity of demand and supply, Demand forecasting methods, Consumption laws, Types of competition, Break even analysis, National income accounting, Trends in Industrialization in India, Economies of scale, Production Planning and control.

UNIT II

Money, Banking and Financial Management: Nature and functions of money, Functions of commercial and central banks, Credit creation in the banks, Balance of payment and trade, Foreign Exchange, Exchange control, Devaluation and Revaluation, Sources of Industrial Finance, Principles of accounting, Balance sheet & P & L A/C, Cash flow statement.

UNIT III

Principles of Management: Managerial functions - Planning, Organizing Leading & Controlling.

UNIT IV

Marketing Management: Concept of marketing management, P's of marketing, Product life cycle, Market segmentation.

UNIT V

Personnel Management and Industrial Psychology: Concept and importance of Personnel Management recruitment and selection, Training and development, Job evaluation, Fatigue, Accidents - causes and prevention, Nature of Industrial relations, Industrial disputes, Quality of work life.

References

1. Dewtt. K.K., Modern Economic Theory" S. Chand, & Co (r) Ltd (r) 1999.
2. Robbins (r) P. Stephen, Coutter Mary, 'Management' PHI 1998.
3. Kotler Philip, 'Marketing Management', PHI latest edition.
4. Nair N.G.,Latha Nair,Personnel Management and Industrial Relations', S.Chand &Co 1999.
5. Singh S.P. "Industrial Economics & Management" AITBS, New Delhi, 2006
6. Kooutsnnis, 'Modern Economic Theory', PHI, 1996.
7. Maheswari S.N., 'An Introduction to Accountancy' Vikas Publishing House 1999.
8. Koontz Harold, O Donnel Cyril, Weihirch Heniz, 'Management', TMH-1983.
9. Monoppan Arun, Sayadain S (r) Mirza, 'Personnel Management', TMH 1997 Edn.

Revised syllabus (Effective from the session 2012-13)

EEC 505/EEC402/EEC605
MICROPROCESSOR AND MICROCONTROLLER

MM : 100 **Sessional : 30**
Time : 3 Hr **ESE : 70**
L T P **Pass Marks : 40**
3 1 0

NOTE : Ten questions are to be set taking two questions from each unit. The student has to attempt FIVE questions selecting one question from each unit. The previous year papers / model paper can be used as a guideline and the following syllabus should be strictly followed while setting the question paper.

UNIT I

Microcomputers and microprocessors; 8-bit microprocessors; Instructions and timings, 8085 instruction set and programming, stacks subroutines.

UNIT II

Interrupt structure and I/O techniques; Interfacing concepts and devices; Programmable interfacing devices; Serial I/O; 16-bit microprocessors.

UNIT III

Architecture of 8086, Addressing modes, overview of arithmetic and looping instructions in 8086; Micro controllers and their applications.

UNIT IV

Simple experiments on 8085 programming using kit; Interfacing of switches and LED's; Interfacing of ADC and DAC; Use of programmable peripheral interfaces.

UNIT V

Use of counters and timer chips; Interfacing of keyboard and display controller; Serial communication; Interfacing of printer; Programming of 8086 using kit.

Books Recommended

1. Gaonkar R.G.---Microprocessor Architecture, Programming & Application-Wiely Eastern ltd.
2. Ram, B.---Microprocessor and Application-Dhanpatrai Pub.
3. Mathur, A.P.---Introduction to Mircroprocessor.
4. Short, K.L.---Microprocessors and Programmed Logic-Prentice hall.
5. Leventhal, L.A.---Introduction to Microprocessors, software, hardware, programming-Prentice Hall, Inc.

Revised syllabus (Effective from the session 2012-13)

ECS 502
SYSTEM SOFTWARE

MM : 100 **Sessional : 30**
Time : 3 Hr **ESE : 70**
L T P **Pass Marks : 40**
3 1 0

NOTE : Ten questions are to be set taking two questions from each unit. The student has to attempt FIVE questions selecting one question from each unit. The previous year papers / model paper can be used as a guideline and the following syllabus should be strictly followed while setting the question paper.

UNIT I

Introduction: Basic concepts-Machine structure-Instruction formats-Addressing modes-Typical Architectures.

UNIT II

Assemblers: Functions-Features-Machine dependent-Machine independent-Design options-One pass-Multipass- Implementation-Examples

UNIT III

Loaders and Linkers: Functions-Features-Relocation-Program Linking-Linking loader implementation-Automatic library search- Loader option-Linkage editors-Dynamic linking-Bootstrap loaders-Examples

UNIT IV

Microprocessors: Functions-Macro parameters-Using labels-Conditional macro expansion-Recursive macro expansion-General purpose macro processors-Examples.

UNIT V

Compilers and Utilities: Introduction to Compilers-Different phases of a compiler-Simple one pass compiler-Code optimization techniques-System Software tools-Implementation of editors-Debuggers.

References

1. L.Beck, System Software, An Introduction to System Programming, Addison Wesley
2. D.M.Dhamdhere, Systems Programming and Operating Systems,Tata McGraw Hill Company
3. A.V.Aho, Ravi Sethi and J.D.Ullman, Compilers Principles, Techniques and Tools, Addison Wesley

Revised syllabus (Effective from the session 2012-13)

ECS 503
COMPUTER GRAPHICS

MM : 100 **Sessional : 30**
Time : 3 Hr **ESE : 70**
L T P **Pass Marks : 40**
3 1 0

NOTE : Ten questions are to be set taking two questions from each unit. The student has to attempt FIVE questions selecting one question from each unit. The previous year papers / model paper can be used as a guideline and the following syllabus should be strictly followed while setting the question paper.

UNIT I

Introduction: Input and Output devices-graphic adaptors-input methods-classification-Raster and Random scan-Line and circle drawing algorithms-Polygon filling.

UNIT II

Curves, Surfaces and Solids: Clipping-Color table-Animation using Colour table-Anti aliasing methods-Representing curves, Surfaces and solids-B-splines-Bezier curves-Quadtree and octree-Geometric model-Fractals-Hierarchical model.

UNIT III

Transformations: 2D transformations-3D transformations-perspective viewing-Animation of wire frame models

UNIT IV

Hidden Surface Elimination: Hidden line elimination-Hidden surface elimination-Painter's algorithm-Scan the algorithm-Octree method-Z- buffer-Ray tracing

UNIT V

Color Models: Chromaticity diagram-RGB, CMY, HSV, HLS, CIE models-Realism in rendering, halving-Illumination and shading-Gouraud and Phong shading

References

1. Hearn D and Baker M.P., Computer Graphics, Second Edition, PHI.
2. Foley J.D., Van Dam A, Fiener S.K. and Hughes J.F., Computer Graphics, Addison Wesley.
3. Newman W.M. and Sproull R.F., Principles of Interactive Computer Graphics, Tata McGraw Hill Publishing Company Limited.

Revised syllabus (Effective from the session 2012-13)

ECS 504
DATABASE MANAGEMENT SYSTEM

MM : 100 **Sessional : 30**
Time : 3 Hr **ESE : 70**
L T P **Pass Marks : 40**
3 1 0

NOTE : Ten questions are to be set taking two questions from each unit. The student has to attempt FIVE questions selecting one question from each unit. The previous year papers / model paper can be used as a guideline and the following syllabus should be strictly followed while setting the question paper.

UNIT I

Introduction: An overview of Database Management System, Database System Vs File System, Database system concept and architecture, data models schema and interfaces, data definitions language, DML, Overall Database Structure. Data Modeling using the Entity Relationship Model: ER model concepts, notation for ER diagram, mapping constraints, keys, Concepts of Super Key, candidate key, primary key, Generalization, aggregation, reduction of an ER diagram to tables, extended ER model, relationship of higher degree.

UNIT II

Relational Data Model and Language: Relational Data Model concepts, integrity constraints: entity integrity, referential integrity, Keys constraints, Domain Constraints, relational algebra, relational calculus, tuple and domain calculus.
Introduction to SQL: Characteristics of SQL, Advantages of SQL, SQL data types and literals, Types of SQL commands, SQL operators and their procedure, Tables, views and indexes, Queries and sub-queries, Aggregate functions, Insert, update and delete operations, Joins, Union, Intersection, Minus, Cursors in SQL, Triggers and clusters.

UNIT III

Data Base Design & Normalization: Functional dependencies, normal forms, first, second, third normal forms, BCNF, inclusion dependencies, loss less join decomposition, normalization using FD, MVD and JDs, alternative approaches to database design.

UNIT IV

Transaction Processing Concepts: Transaction system, Testing of serializability, Serializability of schedules, conflict & view Serializable schedule, recoverability, Recovery from transaction failures, log based recovery, checkpoints, deadlock handling.

UNIT V

Concurrency Control Techniques: Concurrency Control, Locking Techniques for Concurrency control, Time stamping protocols for concurrency control, validation based protocol, multiple granularity, Multi-version schemes, Recovery with concurrent transaction, Transaction processing in Distributed system, Data fragmentation, Replication and allocation

techniques for distributed system, overview of concurrency control and recovery in distributed database.

References

1. Date C.J., An Introduction to Database System, Addision Wesley.
2. Korth, Silbertz, Subaeshan, Database Concepts, McGraw Hill.
3. Elmasri, Navathe, Fundamentals of Database Systems, Addision Wesley.
4. Paul Beynon Davies, Database System, Palgrave Macmillan.
5. Bipin C. Desai, An Introduction to Database System, Galgotia Publication.
6. Majumdar & Bhattacharya, Database Management System, TMH.
7. Ramakrishnan, Gehrke, Database Management system, McGraw Hill.
8. Bharti P.K., An Introduction to Database Systems, JPNP.

Revised syllabus (Effective from the session 2012-13)

ECS 551
JAVA PROGRAMMING LAB

MM : 50 **Sessional: 15**
Time : 2 hrs **ESE: 35**
L T P **Pass Marks: 20**
0 0 2

Write Following Programs In Java

1. Write a program in Java for illustrating overloading, over riding and various forms of inheritance.
2. Write programs to create packages and multiple threads in Java.
3. Write programs in Java for event handling Mouse and Keyboard events.
4. Using Layout Manger create different applications.
5. Write programs in Java to create and manipulate Text Area, Canvas, Scroll
6. Bars, Frames, and Menus using swing/AWT.
7. Using Java create Applets.
8. Using Java language for Client Server Interaction with stream socket connections.
9. Write a program in Java to read data from disk file.
10. Write a program to show use of swing controls.

NOTE

1. Each experiment shall carry 20 marks and 15 marks shall be reserved for viva-voce examination.
2. In practical examination the student shall be required to perform one experiment.
3. A teacher shall be assigned 20 students for daily practical work in laboratory.
4. No batch for practical class shall consist of more than 20 students.
5. The number of students in a batch allotted to an examiner for practical examination shall not exceed 20 students.
6. Addition/deletion in above list may be made in accordance with the facilities available with the approval of H.O.D./Dean.

EEC 553/EEC451/EEC654
MICROPROCESSOR & MICROCONTROLLER LAB

MM : 50 **Sessional: 15**
Time : 2 hrs **ESE: 35**
L T P **Pass Marks: 20**
0 0 2

LIST OF EXPERIMENT

1. Addition of 8 bit hexadecimal numbers without carry.
2. Addition of 8 bit hexadecimal numbers with carry.
3. To calculate 2's compliments of a 8 bit number.
4. Subtraction of two 8 bit hexadecimal number.
5. Interfacing with 8255 in I/O mode & BSR mode.
6. Verification of all interrupts.
7. Multiplication of 8 bit hexadecimal number by 2.
8. Division of 8 bit hexadecimal numbers.
9. Addition of two 8 bit decimal numbers.
10. Transfer the block from one memory location to another.

NOTE

1. Each experiment shall carry 20 marks and 15 marks shall be reserved for viva-voce examination.
2. In practical examination the student shall be required to perform one experiment.
3. A teacher shall be assigned 20 students for daily practical work in laboratory.
4. No batch for practical class shall consist of more than 20 students.
5. The number of students in a batch allotted to an examiner for practical examination shall not exceed 20 students.
6. Addition/deletion in above list may be made in accordance with the facilities available with the approval of H.O.D./Dean.

ECS 552
COMPUTER GRAPHICS LAB

MM : 50 **Sessional: 15**
Time : 2 hrs **ESE: 35**
L T P **Pass Marks: 20**
0 0 2

Write Following Programs In 'C'/C++

1. Implementation of line generation using slope's method, DDA and Bresenham's algorithms.
2. Implementation of circle generation using Mid-point method and Bresenham's algorithm.
3. Implementation of ellipse generation using Mid-point method.
4. Implementation of polygon filling using Flood-fill, Boundary-fill and Scan-line algorithms.
5. Implementation of 2D transformation: Translation, Scaling, Rotation, Mirror
6. Reflection and Shearing (write a menu driven program).
7. Implementation of Line Clipping using Cohen-Sutherland algorithm and Bisection Method.
8. Implementation of Polygon Clipping using Sutherland-Hodgman algorithm.
9. Implementation of 3D geometric transformations: Translation, Scalind and rotation.
10. Implementation of Curve generation using Interpolation methods.
11. Implementation of Curve generation using B-spline and Bezier curves.
12. Implementation of any one of Back face removal algorithms such as Depth-Buffer algorithm, Painter's algorithm, Warnock's algorithm, Scan-line algorithm).

NOTE

1. Each experiment shall carry 20 marks and 15 marks shall be reserved for viva-voce examination.
2. In practical examination the student shall be required to perform one experiment.
3. A teacher shall be assigned 20 students for daily practical work in laboratory.
4. No batch for practical class shall consist of more than 20 students.
5. The number of students in a batch allotted to an examiner for practical examination shall not exceed 20 students.
6. Addition/deletion in above list may be made in accordance with the facilities available with the approval of H.O.D./Dean.

Revised syllabus (Effective from the session 2012-13)

ECS 553
DBMS LAB

MM : 50 **Sessional: 15**
Time : 2 hrs **ESE: 35**
L T P **Pass Marks: 20**
0 0 2

Perform following queries in Oracle

1. Create table using sql commands.
2. Perform insertion, updation and deletion on tables.
3. Perform select queries on table.
4. Perform joins and sub-queries.
5. Use different type of text, number and date/time functions.
6. Create views on tables.
7. Create cursors to update data.
8. Create triggers on tables.
9. Create partitions on tables.
10. Grant and revoke permissions on tables.

NOTE

1. Each experiment shall carry 20 marks and 15 marks shall be reserved for viva-voce examination.
2. In practical examination the student shall be required to perform one experiment.
3. A teacher shall be assigned 20 students for daily practical work in laboratory.
4. No batch for practical class shall consist of more than 20 students.
5. The number of students in a batch allotted to an examiner for practical examination shall not exceed 20 students.
6. Addition/deletion in above list may be made in accordance with the facilities available with the approval of H.O.D./Dean.

Revised syllabus (Effective from the session 2012-13)

ECS 601
THEORY OF AUTOMATA AND FORMAL LANGUAGES

MM : 100 **Sessional : 30**
Time : 3 Hr **ESE : 70**
L T P **Pass Marks : 40**
3 1 0

NOTE : Ten questions are to be set taking two questions from each unit. The student has to attempt FIVE questions selecting one question from each unit. The previous year papers / model paper can be used as a guideline and the following syllabus should be strictly followed while setting the question paper.

UNIT I

Regular Languages: Finite State systems – Basic Definitions – Finite Automation – DFA & NFA – Finite Automaton with e-moves – Regular Expression – Equivalence of NFA and DFA – Equivalence of NFA's with and without e-moves – Equivalence of finite Automaton and regular expressions – Pumping Lemma for Regular sets – Problems based on Pumbing Lemma.

UNIT II

Context Free Languages: Context Free Grammars – Derivations and Languages – Relationship between derivation and derivation trees – ambiguity – simplification of CEG – Greiback Normal form – Chomsky normal forms – Problems related to CNF and GNF

UNIT III

Pushdown Automata: Definitions – Moves – Instantaneous descriptions – Deterministic pushdown automata – Pushdown automata and CFL - pumbing lemma for CFL - Applications of pumbing Lemma.

UNIT IV

Turing Machines: Turing machines – Computable Languages and functions – Turing Machine constructions – Storage in finite control – multiple tracks – checking of symbols – subroutines – two way infinite tape.

UNIT V

Undecidability: Properties of recursive and Recursively enumerable languages – Universal Turing Machines as an undecidable problem – Universal Languages – Rice's Theorems

References

1. J.E.Hopcroft and Jeffery D.Ullman, Introduction to Automata Theory, Languages and Computation, Narosa Publishers
2. Michael Sipser,Introduction to the Theory of Computation, Brooks/Cole Thomson Learning
3. J.C.Mortin, Introduction to languages and Theory of computation, McGraw Hill

Revised syllabus (Effective from the session 2012-13)

ECS 602
ADVANCE JAVA

MM : 100 **Sessional : 30**
Time : 3 Hrs **ESE : 70**
L T P **Pass Marks : 40**
3 1 0

NOTE : Ten questions are to be set taking two questions from each unit. The student has to attempt FIVE questions selecting one question from each unit. The previous year papers / model paper can be used as a guideline and the following syllabus should be strictly followed while setting the question paper.

UNIT I

JDBC: The connectivity Model, JDBC/ODBC Bridge, java.sql package, connectivity to remote database, navigating through multiple rows retrieved from a database. insertion, updation and deletion in database using JDBC.
Networking and Java Library: Basics of Networking, Inetaddress, TCP/IP sockets, datagrams,
URL, URL connection, using sockets and datagram sockets to transfer data.

UNIT II

Remote Method Invocation (RMI): Introduction, Creating a Distributed System with RMI, Defining the Remote Interface Implementing the Remote Interface, Define the Client, Compiling and Executing the Server and the Client.
Java Beans: Introduction, Bean Box Overview, Preparing a Class to Be a JavaBeans, Creating a JavaBeans: Java Archive Files and the jar Utility, Adding Beans to the Bean Box, Connecting Beans with Events in the Bean Box, Adding Properties to a JavaBeans, Creating a JavaBeans with a Bound Property, Specifying the Bean Info Class for a JavaBeans

UNIT III

Servlets : Background, Life cycle of a servlet, Reading servlet parameters, HTTP GET Requests – Handling HTTP Post Requests, Cookies and Session Handling, HTTP Response codes, HTTP Response Headers, Database handling using servlets.

UNIT IV

JSP: JSP overview, Problems with Servlets, JSP Processing, Setting UP the JSP Environment, Processing Input and Output, Understanding the need for JSP, Evaluating the benefits of JSP, Comparing JSP to other technologies, Avoiding JSP misconceptions, Installing JSP pages, Surveying JSP syntax, JSP expressions, JSP scriptlets, JSP declarations, Servlet code resulting from JSP scripting elements, Scriptlets and conditional text.

UNIT V

JSP: Using JavaBeans Components in JSP, Error Handling and Debugging, Sharing Data Between JSP Pages, Requests and Users, Using jsp:include, jsp:forward and jsp:plugin, The Model View Controller (MVC) Architecture, Accessing a Database.

References

1. Marty and Hall, Core Servlets and JSP, Prentice Hall and Sun Microsystems Press.
2. Complete Reference JSP, TMH
3. Deiltel & Deitel, Advanced Java, TMH

Revised syllabus (Effective from the session 2012-13)

ECS 603
DESIGN AND ANALYSIS OF ALGORITHMS

MM : 100 **Sessional : 30**
Time : 3 Hr **ESE : 70**
L T P **Pass Marks : 40**
3 1 0

NOTE : Ten questions are to be set taking two questions from each unit. The student has to attempt FIVE questions selecting one question from each unit. The previous year papers / model paper can be used as a guideline and the following syllabus should be strictly followed while setting the question paper.

UNIT I

Introduction : Definition and characteristics of Algorithms; Analyzing algorithms; Program performance: time and space complexity, Asymptotic notation, complexity analysis. Recurrence equations and their solutions.

UNIT II

Algorithmic Techniques: Algorithm design strategies such as recursion, Divide and conquer, greedy method, dynamic programming, back tracking, branch and bound examples, applications and analysis.

UNIT III

Search Trees: Balanced trees – AVL and 2-3 trees, Algorithms for building and maintaining these trees; B-trees- m-way search trees, insertions and deletion for B-trees, optimal search trees- optimality Criterion, insertion deletions, analysis.

UNIT IV

Graph Algorithms: Search methods- DFS and BFS, Spanning trees, Biconnectivity, Minimum cost spanning trees- Kruskal's , Prime's and Sollin's algorithms; path finding and shortest path algorithms; topological sorting; Bipartite graphs

UNIT V

Infeasibility: P and NP classes; NP-hard problems Parallel algorithms: Introduction, data and control parallelism, parallel algorithms for matrix multiplication; embedding of problems graphs into processor graphs, load balancing and scheduling problems.

References

1. Sahni S, Data structures, Algorithms and applications in C++ , McGraw Hill
2. Aho, A.V., Hopcroft, J.E. & Ullman, J.D, The Design and Analysis of Computer Algorithms , PHI
3. Mchugh J.A., Algorithmic Graph Theory, PHI
4. Quinn M.J., Parallel Computing Theory & Practice, McGraw Hill
5. Goodman, S.E. & Hedetniemi, Introduction to the Design and Analysis of Algorithms, Mc-Graw Hill

Revised syllabus (Effective from the session 2012-13)

ECS 604 / ECS 705
COMPUTER NETWORK

MM : 100 **Sessional : 30**
Time : 3 Hr **ESE : 70**
L T P **Pass Marks : 40**
3 1 0

NOTE : Ten questions are to be set taking two questions from each unit. The student has to attempt FIVE questions selecting one question from each unit. The previous year papers / model paper can be used as a guideline and the following syllabus should be strictly followed while setting the question paper.

UNIT I

Introduction : Computer Network & its uses, OSI reference model, TCP/IP Reference Model, ARPANET, Protocols, Routers, Switches, Hubs, Bridges and Repeaters.
The Physical Layer: Transmission media: Twisted pair, Baseband and Broadband coaxial cable, Fiber optics; Wireless Transmission: Radio transmission, Microwave transmission, Infrared and light wave transmission; ISDN: services and architecture.

UNIT II

The Data Link Layer: Design Issues: Services provided to other Layer, framing, Error control, Flow control; Error detection and Correction; Simplex, Sliding window protocol, Using Go-Back n, Stop & Wait Protocol ARQ.
The Medium Access Sub Layer: Static and Dynamic Channel Allocation in LANs and MANs; IEEE standard 802.3, 802.4, 802.5; CSMA.

UNIT III

The Network Layer: Network layer design issues, Shortest path routing, Flooding, flow-based routing, Broadcast routing, Congestion control and prevention policies; Traffic Shaping, Internetworking : connectionless Interworking, IP addressing, IPv4, Fragmentation.

UNIT IV

The Transport Layer: QOS, The transport service; Transport protocols: Addressing, Establishing and releasing a connection; TCP/UDP header**.**
Session Layer-RPC, Synchronization, dialog management.

UNIT V

The Application Layer: Network Security, FTP, SNMP, Telnet, E- mail, Multimedia, WWW, DNS, SMTP.
Presentation Layer: ASN, data compression, encryption.

References

1. Andrew S. Tanenbaum (3/e), Computer Networks, PHI
2. Frouzan , Data Communications & Networking(3/e, 4/e)
3. W.Stallings (5/e), Data and Computer Communications, PHI
4. Douglas E.Comer (3/e), Interworking with TCP/IP,Principles, Protocols & Architecture
5. D. Minoli, Internet & Intranet Engineering, TMH

Revised syllabus (Effective from the session 2012-13)

ECS 605
ARTIFICIAL INTELLIGENCE

MM : 100 **Sessional : 30**
Time : 3 Hr **ESE : 70**
L T P **Pass Marks : 40**
3 1 0

NOTE : Ten questions are to be set taking two questions from each unit. The student has to attempt FIVE questions selecting one question from each unit. The previous year papers / model paper can be used as a guideline and the following syllabus should be strictly followed while setting the question paper.

UNIT I

Introduction: Introduction to Artificial Intelligence, Simulation of sophisticated & Intelligent Behavior in different area problem solving in games, natural language, automated reasoning, visual perception, heuristic algorithm versus solution guaranteed algorithms.

UNIT II

Understanding Natural Languages: Parsing techniques, context free and transformational grammars, transition nets, augmented transition nets, Fillmore's grammars, Shanks Conceptual Dependency, grammar free analyzers, sentence generation, and translation.

UNIT III

Knowledge Representation: First order predicate calculus, Horn Clauses, Introduction to PROLOG, Semantic Nets, Partitioned Nets, Minskey frames, Case Grammar Theory, Production Rules Knowledge Base, The Interface System, Forward & Backward Deduction.

UNIT IV

Expert System: Existing Systems (DENDRAL, MYCIN) domain exploration Meta Knowledge, Expertise Transfer, Self Explaining System

UNIT V

Pattern Recognition: Introduction to Pattern Recognition, Structured Description, Symbolic Description, Machine perception, Line Finding, Interception Semantic & Model, Object Identification, Speech Recognition. Programming Language Introduction to programming Language, LISP, PROLOG

References

1. Charnick, Introduction to A.I., Addision Wesley
2. Rich & Knight, Artificial Intelligence
3. Winston, LISP, Addision Wesley
4. Marcellous, Expert System Programming, PHI
5. Elamie, Artificial Intelligence, Academic Press
6. Lioyed, Foundation of Logic Processing, Springer Verlag

Revised syllabus (Effective from the session 2012-13)

ECS 606
.net TECHNOLOGIES

MM : 100 **Sessional : 30**
Time : 3 Hr **ESE : 70**
L T P **Pass Marks : 40**
3 1 0

NOTE : Ten questions are to be set taking two questions from each unit. The student has to attempt FIVE questions selecting one question from each unit. The previous year papers / model paper can be used as a guideline and the following syllabus should be strictly followed while setting the question paper.

UNIT I

Introduction , Basic Concepts and a Simple Application , Using Variables, Constants, Functions , Processing Decisions , Looping Structures and Lists , Sub Procedures, Function Procedures, Modules , Arrays, Structures, Collections

UNIT II

Windows Forms, Adding Controls, Adding an Event Handler, Adding Controls at Runtime Attaching an Event Handler at Runtime, Menu , Multiple Document Interface, Dialog Form ,Form Inheritance, Tab-Control, Anchoring Controls, Changing the Startup Form, ListView , TreeView imageList Context Menu, TreeView, Creating Controls at run time, Creating a User Control, adding Functionality, Writing a Custom Control, Testing the Control.

UNIT III

ADO.NET Architecture, ConnectionObject, Connection String, CommandObject, DataReaders, DataSets and DataAdapters, DataTable, DataColumn, DataRow, Differences between DataReader Model and DataSet Model, DataViewObject, Working with System.Data.OleDb, Working with SQL.NET, Using Stored Procedures, Working with Odbc.NET, Using DSN Connection

UNIT IV

Creating Distributed Web Applications, XML and ADO.NET, Graphics, Printing, Reporting

UNIT V

Building ASP.NET Pages: Overview of the ASP.NET Framework , Using the Standard Controls, Using the Validation Controls, Using the Rich Controls, Designing Websites with Master Pages, Creating Custom Controls with User Controls.

References

1. “Database Programming in VB.NET”, Chittibabu Govindarajulu, Pearson
2. “Understanding .NET”, Chappell, David, Addison Wesley, 2006
3. **“**Asp.Net : A Beginners Guide”, Mercer , TMH

Revised syllabus (Effective from the session 2012-13)

ECS 651
ADVANCE JAVA LAB

MM : 50 **Sessional: 15**
Time : 2 hrs **ESE: 35**
L T P **Pass Marks: 20**
0 0 2

Perform Following In Java/Servlets/JSP

1. Write a program to connect a java program to database.
2. Write a program to implement dedicated connection.
3. Write a program to implement non-dedicated connection.
4. Write a program to create a application using RMI.
5. Write a program to implement database application using RMI.
6. Write a program to create a new component using Java Beans.
7. Write a program to implement pass parameters in Servlets.
8. Write a program to show use of Cookies in JSP.
9. Write a program to create a database application in JSP.
10. Write a program to implement session tracking.

NOTE

1. Each experiment shall carry 20 marks and 15 marks shall be reserved for viva-voce examination.
2. In practical examination the student shall be required to perform one experiment.
3. A teacher shall be assigned 20 students for daily practical work in laboratory.
4. No batch for practical class shall consist of more than 20 students.
5. The number of students in a batch allotted to an examiner for practical examination shall not exceed 20 students.
6. Addition/deletion in above list may be made in accordance with the facilities available with the approval of H.O.D./Dean.

Revised syllabus (Effective from the session 2012-13)

ECS 660
'C' PROJECT LAB

MM : 100 **Sessional: 30**
Time : 2 hrs **ESE: 70**
L T P **Pass Marks: 40**
0 0 2

To develop a project of use in real world by each student in C Language.Topic has to be decided by the concerned faculty.

Project may be of type:

1. Hotel Management
2. Hospital Management
3. Banking
4. Railway Reservation
5. College Management
6. Library Management
7. Sudoku
8. Editor

NOTE

1. Each experiment shall carry 20 marks and 15 marks shall be reserved for viva-voce examination.
2. In practical examination the student shall be required to perform one experiment.
3. A teacher shall be assigned 20 students for daily practical work in laboratory.
4. No batch for practical class shall consist of more than 20 students.
5. The number of students in a batch allotted to an examiner for practical examination shall not exceed 20 students.
6. Addition/deletion in above list may be made in accordance with the facilities available with the approval of H.O.D./Dean.

Revised syllabus (Effective from the session 2012-13)

ECS 652
.net TECHNOLOGIES LAB

MM : 50 **Sessional: 15**
Time : 2 hrs **ESE: 35**
L T P **Pass Marks: 20**
0 0 2

Perform Following In Java/Servlets/JSP

1. Write a program to Add Control
2. Write a program to Add an Event Handler
3. Write a program to implement Multiple Document Interface
4. Write a program to create a application using RMI.
5. Write a program to implement database application using RMI.
6. Write a program to Create Distributed Web Applications.
7. Write a program for SQL.NET
8. Write a program for Writing a Custom Control
9. Write a program to create a database application in JSP.net.
10. Write a program to implement session tracking.

NOTE

1. Each experiment shall carry 20 marks and 15 marks shall be reserved for viva-voce examination.
2. In practical examination the student shall be required to perform one experiment.
3. A teacher shall be assigned 20 students for daily practical work in laboratory.
4. No batch for practical class shall consist of more than 20 students.
5. The number of students in a batch allotted to an examiner for practical examination shall not exceed 20 students.
6. Addition/deletion in above list may be made in accordance with the facilities available with the approval of H.O.D./Dean.

Revised Syllabus (Effective from the session 2013-14)

Gurukula Kangri Vishwavidyalaya, Haridwar
Faculty of Engineering & Technology
Computer Science & Engineering

B.Tech. IV Year

Semester - VII

S.N.	Course Code	Subject	Periods			Evaluation Scheme				Subject Total
						Sessional Exam			EXAM ESE	
			L	T	P	CT	TA	Total		
THEORY										
1.	ECS701	Compiler Design	3	1	0	20	10	30	70	100
2.	EMA701	Optimization Techniques	3	1	0	20	10	30	70	100
3.	ECS702	Cryptography & Network Security	3	1	0	20	10	30	70	100
4.	ECS703	UNIX and Shell Programming	3	1	0	20	10	30	70	100
5.	ECS704	Visual Programming	3	1	0	20	10	30	70	100
PRACTICAL										
6.	ECS751	UNIX Lab	0	0	2	0	15	15	35	50
7.	ECS752	Visual Programming Lab	0	0	2	0	15	15	35	50
8.	ECS760	Minor Project	0	0	4	0	50	50	150	200
		TOTAL	15	5	8	100	130	230	570	800

L- LECTURE; T- TUTORIAL; P- PRACTICAL;
CT-CUMULATIVE TEST; TA- TEACHER ASSESSMENT; ESE–END SEMESTER EXAMINATION

Revised Syllabus (Effective from the session 2013-14)

Gurukula Kangri Vishwavidyalaya, Haridwar
Faculty of Engineering & Technology
Computer Science & Engineering

B.Tech. IV Year

Semester - VIII

S.N.	Course Code	Subject	Periods			Evaluation Scheme				Subject Total
						Sessional Exam			EXAM ESE	
			L	T	P	CT	TA	Total		
THEORY										
1.	ECS801	Advance Database	3	1	0	20	10	30	70	100
2.	ECS802	Advance Computer Network	3	1	0	20	10	30	70	100
3.		Elective-I	3	1	0	20	10	30	70	100
4.		Elective-II	3	1	0	20	10	30	70	100
PRACTICAL										
5.	ECS860	Major Project	0	0	8	0	100	100	300	400
		TOTAL	12	4	8	80	140	220	580	800

L- LECTURE; T- TUTORIAL; P- PRACTICAL;
CT-CUMULATIVE TEST; TA- TEACHER ASSESSMENT; ESE–END SEMESTER EXAMINATION

Elective 1:

S. No	CODE	SUBJECT
1.	ECS 803	Parallel Algorithms
2.	ECS 804	E-Commerce
3.	ECS 805	Digital Image Processing
4.	ECS 806	Mobile Computing

Elective 2:

S. No	CODE	SUBJECT
1.	ECS 807	Natural Language Processing
2.	ECS 808	Real Time Systems
3.	ECS 809	Embedded System
4.	ECS 810	Advance Computer Architecture

NOTE: Electives will be offered depending upon the availability of teaching staff and minimum thirty students should opt for a particular elective.

Revised syllabus (Effective from the session 2013-14)

ECS 701
COMPILER DESIGN

MM : 100 **Sessional : 30**
Time : 3 Hr **ESE : 70**
L T P **Pass Marks : 40**
3 1 0

NOTE: Ten questions are to be set taking two questions from each unit. The student has to attempt FIVE questions selecting one question from each unit. The previous year papers / model paper can be used as a guideline and the following syllabus should be strictly followed while setting the question paper.

UNIT I

Compiler Structure: Compiler and translator, various phases of compiler, pass structure of compiler, boot strapping of compiler.

Programming Languages: High level languages, The lexical and syntactic structure of a language, data elements, data structure, operations, assignments, program unit, data environment, parameter transmissions.

Lexical Analysis: The role of lexical analyzer, a simple approach to the design of lexical analyzer, regular expressions, transaction diagram, finite state machines, Implementation of lexical analyzer, lexical analyzer generator : LEX, capabilities of lexical analyzer.

UNIT II

The Syntactic Specification of Programming Languages : CFG, Derivation and Parse tree, Ambiguity capabilities of CFG.

Basic Parsing Techniques : Top down Parser with back tracking, recursive recent parsers, predicate parsers, bottom-up parsers, Shift-reduce parsing, operator precedence parsers, LR Parsers (SLR canonical LR, LALR), Syntax analyzer generator : YACC.

UNIT III

Intermediate Code Generator : Different intermediate forms - Three address code, Quadruplex and triples, syntax direct translation mechanism and attributed definition. Translation of Declaration, Assignment, Control flow, Boolean expression, Array references in arithmetic expression, produced calls, case statement, postfix translation.

UNIT IV

Run Time Memory Management : Static and dynamic storage allocation, stack based memory allocation schemes, symbol table management.

Error Detection and Recovery : Lexical phases error, syntactic phase errors, semantic errors.

UNIT V

Code Optimization and Code Generation : Local optimization, loop, peephole optimization, basic blocks and flow graphs DAG, data flow analyzer, machine model, order of evaluation, register allocation of code selection.

References

1. Alfred V Aho, Jeffrey D. Ullman, Principles of Compiler Design, Narosa.
2. V. Aho, R. Sethi and J.D. Ullman, Compiler: Principle, Techniques and Tools, AW.
3. H. C. Holub, Compiler Design in C, Prentice Hill Inc.
4. Apple, Modern Computer Implementation in C : Basic Design, Cambridge press.

Revised syllabus (Effective from the session 2013-14)

EMA 701
OPTIMIZATION TECHNIQUES

MM : 100 **Sessional : 30**
Time : 3 Hr **ESE : 70**
L T P **Pass Marks : 40**
3 1 0

NOTE: Ten questions are to be set taking two questions from each unit. The student has to attempt FIVE questions selecting one question from each unit. The previous year papers / model paper can be used as a guideline and the following syllabus should be strictly followed while setting the question paper.

UNIT I

Linear Programming : Introduction, Construction of LP Model, Graphical of Solution LP. Simplex Method, Introduction, Standard LP Form and its basic Solutions, Simplex Algorithm, Artificial Starting Solution, Special cases in Simplex Method, Applications. **8**

UNIT II

Duality: Introduction, Definition of Dual Problems, Relationship between the Optimal Primal and Dual Solutions, Economic Interpretation of Duality, Dual Simplex Method, Primal Dual Computation. **8**

UNIT III

Integer Programming : Methods of Integer Programming, Cutting-Plane Method: Fractional (Pure Integer) Method, Mixed-Cut method, Branch and Bound Technique.

.

Deterministic Dynamic Programming : Introduction, Recursive Nature of Computing, Forward and Backward Recursion, Applications of Dynamic Programming in Shortest Route Problem, Cargo Loading Problem, Work Force Size Model. **8**

UNIT IV

Transportation and Assignment Model : Definition of Transportation Model, Non Traditional Transportation Model, Transportation Algorithms, Assignments Model.
Game Theory : Minimax-Maximin criterion, Pure strategies, Mixed strategies and Expected Payoff, Concept of Dominance, Graphical Solution of m x 2 and 2 x n Games. Solution by Linear Programming method. **7**

UNIT V

Queuing Theory : Definition of Queuing System, Characteristics of Queuing Models, Notation, Transient and Steady State of Queuing System, Birth-Death process, Pure birth & Pure Death processes, (M/M/1):(FIFO/ ∞); (M/M/s):(FIFO/ ∞ / ∞); (M/M/1):(FIFO/N/∞) Models, Their Characteristics, State Transition Diagrams. **9**

References

1. Taha, Hamdy A., Operations Research, (Maxwell Macmillan)
2. Kanti Swarup, P.K. Gupta, Man Mohan Operations Research, (Sultan Chand & Sons)
3. Gillet, Billy E.,Introduction to Operations Research, A Computer Oriented Algorithmic Approach (TMH)

Revised syllabus (Effective from the session 2013-14)

ECS 702
CRYPTOGRAPHY AND NETWORK SECURITY

MM : 100 **Sessional : 30**
Time : 3 Hr **ESE : 70**
L T P **Pass Marks : 40**
3 1 0

NOTE: Ten questions are to be set taking two questions from each unit. The student has to attempt FIVE questions selecting one question from each unit. The previous year papers / model paper can be used as a guideline and the following syllabus should be strictly followed while setting the question paper.

UNIT I

Introduction: Introduction to security attacks, services and mechanism, introduction to cryptography. Conventional Encryption: Conventional encryption model, classical encryption techniques- substitution ciphers and transposition ciphers, cryptanalysis, stereography, stream and block ciphers.

Modern Block Ciphers: Block ciphers principals, Shannon's theory of confusion and diffusion, fiestal structure, data encryption standard(DES), strength of DES, differential and linear crypt analysis of DES, block cipher modes of operations, triple DES, IDEA encryption and decryption, strength of IDEA, confidentiality using conventional encryption, traffic confidentiality, key distribution, random number generation.

UNIT II

Introduction to graph, ring and field, prime and relative prime numbers, modular arithmetic, Fermat's and Euler's theorem, primality testing, Euclid's Algorithm, Chinese Remainder theorem, discrete logarithms. Principals of public key crypto systems, RSA algorithm, security of RSA, key management, Diffle-Hellman key exchange algorithm, introductory idea of Elliptic curve cryptography, Elganel encryption.

UNIT III

Message Authentication and Hash Function: Authentication requirements, authentication functions, message authentication code, hash functions, birthday attacks, security of hash functions and MACS, MD5 message digest algorithm, Secure hash algorithm(SHA).

Digital Signatures: Digital Signatures, authentication protocols, digital signature standards (DSS), proof of digital signature algorithm.

UNIT IV

Authentication Applications: Kerberos and X.509, directory authentication service, electronic mail security-pretty good privacy (PGP), S/MIME.

UNIT V

IP Security: Architecture, Authentication header, Encapsulating security payloads, combining security associations, key management.

Web Security: Secure socket layer and transport layer security, secure electronic transaction (SET).

System Security: Intruders, Viruses and related threads, firewall design principals, trusted systems.

References

1. William Stallings, Cryptography and Network Security: Principals and Practice, Prentice Hall, New Jersy.
2. Johannes A. Buchmann, Introduction to Cryptography, Springer-Verlag.
3. Bruce Schiener, Applied Cryptography

Revised syllabus (Effective from the session 2013-14)

ECS 703
UNIX AND SHELL PROGRAMMING

MM : 100 **Sessional : 30**
Time : 3 Hr **ESE : 70**
L T P **Pass Marks : 40**
3 1 0

NOTE: Ten questions are to be set taking two questions from each unit. The student has to attempt FIVE questions selecting one question from each unit. The previous year papers / model paper can be used as a guideline and the following syllabus should be strictly followed while setting the question paper.

UNIT I

Introduction : The UNIX operating system, The UNIX architecture, Features of UNIX, Locating commands, Internal and external commands, General purpose utilities – cal, date, echo, printf, bc, script, passwd, who, uname.

UNIT II

UNIX File System : File system and inodes, Type of files – Ordinary files, Directory files and Device files. The UNIX file system. Creating and handling files, copying, renaming and creating links, absolute and relative pathnames, File permissions and ownership , Comparing files, Compressing and decompressing files, archiving files.

UNIT III

VI Editor: vi basics, Different modex in vi editor, Different working commands in vi editor, handling multiple files, storing multiple text sections, searching and marking text, customizing vi.

AWK Filter: Awk filtering, splitting line into fields, comparison operators, number processing and variables, BEGIN and END section, arrays and functions, Control flow – if, for and while.

Perl Manipulator : perl preliminaries, chop function, variables and operators, string handling, list and arrays, looping, splitting into a list or array and joining lists.

UNIT IV

Shell Programming : Shell scripts, operators, reading and printing, control statement – if, case, while and for. Expression evaluation, command line arguments and shift command, debugging a shell program, exporting shell variables, arrays and string handling, merging streams and shell functions.

UNIT V

Unix System Administration : Administrative privileges, maintaining security, user management, startup and shutdown, managing disk space, device files and handling floppy diskettes, backup and archive programs, partitions and file systems, creating partitions and file systems, mounting and un-mounting file systems, file system checking, system startup and shutdown.

References

1. Sumitabh Das, Unix Concepts and applications, TMH.
2. Stephen Parata, Advance Unix Programming Guide, BPB.
3. Yashwant Kanitkar, Unix Shell Programming, BPB.
4. Mike Joy, Stephen Jarvis, Michael Luck, Introducing Unix and Linux, Palgrave Macmilan.
5. Rachel Morgan, Henry McGilton, Introducing Unix System V, TMH.

Revised syllabus (Effective from the session 2013-14)

ECS 704
VISUAL PROGRAMMING

MM : 100 **Sessional : 30**
Time : 3 Hr **ESE : 70**
L T P **Pass Marks : 40**
3 1 0

NOTE: Ten questions are to be set taking two questions from each unit. The student has to attempt FIVE questions selecting one question from each unit. The previous year papers / model paper can be used as a guideline and the following syllabus should be strictly followed while setting the question paper.

UNIT I

Introduction to Windows Programming : Windows operating system and MFC, MFC and Windows OS Interaction, The structure of an MFC application, Creating window using MFC, Resource files, Customized icon, cursor and background, Adding menus to window and controlling menu items. Working with timers.

UNIT II

Event Handling: Message Maps, Handling mouse and keyboard events, Handling menu events, Graphics and text drawing, Graphics Device Interface (GDI), Device Context Classes (CDC, CPaintDC & CClientDC), Creating pen and brush, Drawing and bitmap graphics. Adding toolbars and status bar.

UNIT III

Child Windows and Dialog Boxes: Create child windows, popup windows. Using message boxes. Dialog boxes – Modal vs Modeless, Adding dialog boxes to window, Adding controls and handling controls in dialog boxes like Static Text, Edit Box, Command Button Control, Check Box, Radio Button, Lists.

UNIT IV

Document-View Architecture: The Structure of Document-View Architecture, Message Routing, SDI and MDI applications, Message maps in Document-View architecture, Customizing mainframe window and view window, The document template and RUNTIME_CLASS macro.

UNIT V

Splitter Windows and ActiveX Controls: Creating splitter windows, Multiple view classes. What is ActiveX control and adding ActiveX control to project, Using ActiveX control in project, Interacting with control and responding to control ActiveX control events.

References

1. Shirley Wodtke, MFC C++ Classes, BPB Publications.
2. Davis Chapman, Visual C++ Programming, SAMS Publications
3. Kate Gregory, Using Visual C++, Prentice Hall of India Pvt., Ltd.
4. C.H. Pappas, W.H. Murray, Visual C++: The Complete Reference, Tata McGraw-Hill Publishing Company

Revised syllabus (Effective from the session 2013-14)

ECS 751
UNIX LAB

MM : 50 **Sessional : 15**
Time : 2Hr **ESE : 35**
L T P **Pass Marks : 20**
0 0 2

Perform Following in UNIX

1. Perform different file handling commands.
2. Change file permissions and ownership.
3. Copying and moving files to different folders using relative and absolute path.
4. Using vi editor.
5. Handling files using awk and perl.
6. Create a shell program to reverse a number.
7. Create a shell program to reverse a string.
8. Create a shell program to update a file.
9. Create new user and groups.
10. Display partition information and system information.

NOTE

1. Each experiment shall carry 20 marks and 15 marks shall be reserved for viva-voce examination.
2. In practical examination the student shall be required to perform one experiment.
3. A teacher shall be assigned 20 students for daily practical work in laboratory.
4. No batch for practical class shall consist of more than 20 students.
5. The number of students in a batch allotted to an examiner for practical examination shall not exceed
   20 students.
6. Addition/deletion in above list may be made in accordance with the facilities available with the
   approval of H.O.D./Dean.

Revised syllabus (Effective from the session 2013-14)

ECS 752
VISUAL PROGRAMMING LAB

MM : 50 **Sessional : 15**
Time : 2Hr **ESE : 35**
L T P **Pass Marks : 20**
0 0 2

Perform Following in VC++

1. Create a minimum MFC program to create a window.
2. Change background color, cursor and icon of a window.
3. Add menu, toolbar and status bar to window and handle events.
4. Create a line using different mouse events.
5. Draw different figures using different type of pen and brushes.
6. Handle keyboard.
7. Create a SDI window using Document-View Architecture.
8. Create a MDI window using Document-View Architecture.
9. Create a splitter window.
10. Create dialog box and different controls to dialog box.
11. Create a window and add ActiveX control to it.
12. Create a child window and exchange events with it.

NOTE

1. Each experiment shall carry 20 marks and 15 marks shall be reserved for viva-voce examination.
2. In practical examination the student shall be required to perform one experiment.
3. A teacher shall be assigned 20 students for daily practical work in laboratory.
4. No batch for practical class shall consist of more than 20 students.
5. The number of students in a batch allotted to an examiner for practical examination shall not exceed
   20 students.
6. Addition/deletion in above list may be made in accordance with the facilities available with the
   approval of H.O.D./Dean.

ECS 760
MINOR PROJECT

MM : 200
L T P
0 0 4

Sessional : 50
(Internal)
ESE : 150
Pass Marks : 80

Each student shall be assigned a Minor Project by departmental committee. The student shall be required to perform his project work under the supervision of the supervisor(s). There shall be a seminar on the project work of the student to be evaluated by a departmental committee chaired by H.O.D. The student shall be required to submit his project report in the form of dissertation 15 days before the end of VII semester. The student shall be required to submit three copies of the project work with certificate from the supervisor(s) that the work is authentic record of the work performed by him. The report shall be forwarded by H.O.D. The report of the project work shall be evaluated by the external examiner(s). The same external examiner(s) shall hold the viva-voce examination.

THE DISTRIBUTION OF MARKS FOR THE MINOR PROJECT SHALL BE AS FOLLOWS:

MINOR PROJECT	
Project**	100
Viva-voce/Presentation**	50
Seminar (Internal)***	50
Total	200

** - Marks for the project work shall be awarded jointly by the external and internal examiners after viva-voce examination.

*** - There shall be a seminar on the project work of the student to be evaluated by the departmental committee chaired by H.O.D.

Revised syllabus (Effective from the session 2013-14)

ECS 801
ADVANCE DATABASE

MM : 100 **Sessional : 30**
Time : 3 Hr **ESE : 70**
L T P **Pass Marks : 40**
3 1 0

NOTE: Ten questions are to be set taking two questions from each unit. The student has to attempt FIVE questions selecting one question from each unit. The previous year papers / model paper can be used as a guideline and the following syllabus should be strictly followed while setting the question paper.

UNIT I

Introduction :Review of relational Databases, Database tuning, Advanced Transaction Processing.

UNIT II

Distributed Databases : Introduction, Architecture, Design, Query Processing,Transaction Management, Concurrency control, Recovery, Parallel databases.

UNIT III

Object Oriented Databases : Introduction, Basic OO concepts, Modeling and design for Object Oriented databases, Persistence, Transaction, Concurrency, Recovery and Versioning.

UNIT IV

Special Purpose Databases : Temporal databases, Active databases, Spatial and multimedia databases, Deductive databases, Mobile databases.

UNIT V

Current Trends : Data warehousing, OLAP, Data mining techniques, Databases and the World Wide Web, Decision support system.

References

1. M. Timer, Ozsu and Patrick Valduriez, Principles of Distributed Database System, Prentice Hall International
2. Setrag Khos Shafian, Object Oriented Databases, John Wiley & Sons Inc., 1993
3. Abdullah Uz Transelet-al (Edited), Temporal Databases – Theory, Design & Implementation, Benjamin / Cummings Publishing Company
4. Jennifer wisdom & Stefano Ceri (Edited), Active Database Systems – Triggers & Rules for Advanced Database Processing, Morgan Kaufmann Publishers Inc.
5. Setrag Khoshafian, A.Brad Baker, Multimedia and Imaging Databases, Morgan Kaufmann

Revised syllabus (Effective from the session 2013-14)

ECS 802
ADVANCE COMPUTER NETWORK

MM : 100 **Sessional : 30**
Time : 3 Hr **ESE : 70**
L T P **Pass Marks : 40**
3 1 0

NOTE: Ten questions are to be set taking two questions from each unit. The student has to attempt FIVE questions selecting one question from each unit. The previous year papers / model paper can be used as a guideline and the following syllabus should be strictly followed while setting the question paper.

UNIT I

OSI model and TCP/IP model, Layered architecture, layer interfaces, Services and protocols, ATM (Design Goals, Problems, Architecture), ATM Connection establishment and release, ATM switching, ATM layers, QoS in ATM.

UNIT II

Routing Techniques, Static Vs Dynamic routing, Static & dynamic routing table, Routing table format, Shortest path routing, distance vector routing, Link state routing, Multicast routing.

Data traffic and properties, Traffic Shaping, Choke Packet, Open and closed loop congestion control, Quality of Service, Techniques to improve QoS, Fragmentation, IPv4 addressing.

UNIT III

Wireless LAN 802.11 Architecture, Physical Layer in 802.11, MAC Sub-layer in 802.11, CSMA/Ca in 802.11, Fragmentation and Frame format, Addressing mechanism, Bluetooth Architecture, Bluetooth Layers.

UNIT IV

IPv4, ICMP, ARP, BGP, CIDR, IPv6 packet format, Transition from IPv4 to IPv6.

UNIT V

Flow control and buffering. Multiplexing. Dialog management. Synchronization. Remote procedure call. Data representation, data compression. Networking security and cryptography.DNS, SNMP, TELNET, FTP, TFTP, NFS, Electronic mail, SMTP, WWW.

References

1. Andrew S. Tanenbaum (3/e), Computer Networks, PHI, 1997
2. Frouzan , Data Communications & Networking(3/e, 4/e)
3. W.Stallings (5/e), Data and Computer Communications, PHI, 1999
4. Douglas E.Comer (3/e), Interworking with TCP/IP,Principles, Protocols & Architecture
5. D. Minoli, Internet & Intranet Engineering, TMH,1999

Revised syllabus (Effective from the session 2013-14)

Gurukula Kangri Vishwavidyalaya, Haridwar
Faculty of Engineering & Technology
Computer Science & Engineering

B. Tech. Fourth Year

SEMESTER-VIII

Elective 1:

S. No	CODE	SUBJECT
1.	ECS 803	Parallel Algorithms
2.	ECS 804	E-Commerce
3.	ECS 805	Digital Image Processing
4.	ECS 806	Mobile Computing

Elective 2:

S. No	CODE	SUBJECT
1.	ECS 807	Natural Language Processing
2.	ECS 808	Real Time Systems
3.	ECS 809	Embedded System
4.	ECS 810	Advance Computer Architecture

NOTE: Electives will be offered depending upon the availability of teaching staff and minimum thirty students should opt for a particular elective.

Revised syllabus (Effective from the session 2013-14)

ECS 803
PARALLEL ALGORITHMS

MM : 100 **Sessional : 30**
Time : 3 Hr **ESE : 70**
L T P **Pass Marks : 40**
3 1 0

NOTE: Ten questions are to be set taking two questions from each unit. The student has to attempt FIVE questions selecting one question from each unit. The previous year papers / model paper can be used as a guideline and the following syllabus should be strictly followed while setting the question paper.

UNIT I

Sequential model, need of alternative model, parallel computational models such as PRAM, LMCC, Hypercube, Cube Connected Cycle, Butterfly, Perfect Shuffle Computers, Tree model, Pyramid model, Fully Connected model, PRAM-CREW, EREW models, simulation of one model from another one.

UNIT II

Performance Measures of Parallel Algorithms, speed-up and efficiency of PA, Costoptimality, An example of illustrate Cost-optimal algorithms- such as summation, Min/Max on various models.

UNIT III

Parallel Sorting Networks, Parallel Merging Algorithms on CREW/EREW/MCC/, Parallel Sorting Networks on CREW/EREW/MCC/, linear array

UNIT IV

Parallel Searching Algorithm, Kth element, Kth element in X+Y on PRAM, Parallel Matrix Transportation and Multiplication Algorithm on PRAM, MCC, Vector-Matrix Multiplication, Solution of Linear Equation, Root finding.

UNIT V

Graph Algorithms - Connected Graphs, search and traversal, Combinatorial Algorithms- Permutation, Combinations, Derrangements.

References

1. M.J. Quinn, Designing Efficient Algorithms for Parallel Computer, Mc Graw Hill.
2. S.G. Akl, Design and Analysis of Parallel Algorithms
3. S.G. Akl, Parallel Sorting Algorithm, Academic Press

Revised syllabus (Effective from the session 2013-14)

ECS 804
E-COMMERCE

MM : 100 **Sessional : 30**
Time : 3 Hr **ESE : 70**
L T P **Pass Marks : 40**
3 1 0

NOTE: Ten questions are to be set taking two questions from each unit. The student has to attempt FIVE questions selecting one question from each unit. The previous year papers / model paper can be used as a guideline and the following syllabus should be strictly followed while setting the question paper.

UNIT I

Electronic Commerce: Frameworks, E-Commerce and Convergence, Anatomy of E-Commerce Applications, Consumer Applications, Organization Applications.
Network Infrastructure for E-Commerce: Market forces influencing, Components of I-Way, Network Access Equipment, Global Information Distribution Network.
Internet as Network Infrastructure: Internet Terminology, History of Internet, NSFNET, National Research and Educational Network, Globalization of Academic Internet, Internet Applications.

UNIT II

E-Commerce and WWW: Architectural Framework of E-Commerce, WWW as the Architecture, Hypertext Publishing, Technology and Security of Web
Consumer Oriented E-Commerce: Consumer Oriented Application, Mercantile Process Model, Mercantile Model from consumer and Merchant's Perspective.
Electronic Payment System: Types of EPS, Digital Token-Based EPS, Smart Cards and EPS, Credit card based EPS, Risk and EPS, Designing EPS.

UNIT III

Inter Organizational Commerce and EDI: EDI, EDI Applications in Business, EDI : Legal, Security and Privacy Issue, EDI and E-Commerce, Standardization and EDI, EDI Software implementation, EDI Envelop for Message Transport, Value Added Networks, Internet Based EDIs.
Intra Organizational E-Commerce: Internal Information System, Macroforces and Internal Commerce, Work-Flow Automation and Coordination, Customization and Internal Commerce.

UNIT IV

Supply Chain Management: SCM Fundamentals, Managing Retail Supply Chain, Supply Chain Application Software, Future of Supply Chain Software
E-Commerce and Banking: Changing Dynamics in Banking industry, Home Banking History and Implementation Approaches, Open Versus Closed Models, Management Issues in Online Banking.
Network Security and Firewalls: Client-Server Network Security, Emerging Client Server

Security Threats, Firewalls and Network Security, Data and Message Security, Challenge Response System, Encrypted Documents and E-Mail.

UNIT V

Advertising and Marketing on the Internet: Information based Marketing, Advertising on Internet, Charting on-Line Marketing Process.
Consumer Search and Resource Discovery: Search and Resource Discovery Paradigms, Information Search and retrieval, E-Commerce Catalogs, Information Filtering, Consumer-Data Interface.
Software Agents: History, Characteristics and Properties of Software Agents, Technology behind Software Agents, Telescript Agent Language, Safe-Tcl, Applets, Browser and Software Agents.

References

1. Ravi Kalokaota and A.B. Whinston, Frontiers of Electronic Commerce , Addison-Wesley
2. Ravi Kalokaota and A.B. Whinston, Electronic Commerce A Manager's Guide, Addison-Wesley

Revised syllabus (Effective from the session 2013-14)

ECS 805
DIGITAL IMAGE PROCESSING

MM : 100 **Sessional : 30**
Time : 3 Hr **ESE : 70**
L T P **Pass Marks : 40**
3 1 0

NOTE: Ten questions are to be set taking two questions from each unit. The student has to attempt FIVE questions selecting one question from each unit. The previous year papers / model paper can be used as a guideline and the following syllabus should be strictly followed while setting the question paper.

UNIT I

Introduction and Fundamentals: Motivation and Perspective, Applications, Components of Image Processing System, Element of Visual Perception, A Simple Image Model, Sampling and Quantization.
Image Enhancement in Spatial Domain : Introduction; Basic Gray Level Functions – Piecewise-Linear Transformation Functions: Contrast Stretching; Histogram Specification; Histogram Equalization; Local Enhancement; Enhancement using Arithmetic/Logic Operations – Image Subtraction, Image Averaging; Basics of Spatial Filtering; Smoothing - Mean filter, Ordered Statistic Filter; Sharpening – The Laplacian.

UNIT II

Image Enhancement in Frequency Domain : Fourier Transform and the Frequency Domain, Basis of Filtering in Frequency Domain, Filters – Low-pass, High-pass; Correspondence Between Filtering in Spatial and Frequency Domain; Smoothing Frequency Domain Filters – Gaussian Lowpass Filters; Sharpening Frequency Domain Filters – Gaussian Highpass Filters; Homomorphic Filtering.
Image Restoration : A Model of Restoration Process, Noise Models, Restoration in the presence of Noise only-Spatial Filtering – Mean Filters: Arithmetic Mean filter, Geometric Mean Filter, Order Statistic Filters – Median Filter, Max and Min filters; Periodic Noise Reduction by Frequency Domain Filtering – Bandpass Filters; Minimum Mean-square Error Restoration.

UNIT III

Color Image Processing : Color Fundamentals, Color Models, Converting Colors to different models, Color Transformation, Smoothing and Sharpening, Color Segmentation.
Morphological Image Processing : Introduction, Logic Operations involving Binary Images, Dilation and Erosion, Opening and Closing, Morphological Algorithms – Boundary Extraction, Region Filling, Extraction of Connected Components, Convex Hull, Thinning, Thickening

UNIT IV

Registration : Introduction, Geometric Transformation – Plane to Plane transformation, Mapping, Stereo Imaging – Algorithms to Establish Correspondence, Algorithms to Recover Depth

Segmentation : Introduction, Region Extraction, Pixel-Based Approach, Multi-level Thresholding, Local Thresholding, Region-based Approach, Edge and Line Detection: Edge Detection, Edge Operators, Pattern Fitting Approach, Edge Linking and Edge Following, Edge Elements Extraction by Thresholding, Edge Detector Performance, Line Detection, Corner Detection.

UNIT V

Feature Extraction : Representation, Topological Attributes, Geometric Attributes
Description : Boundary-based Description, Region-based Description, Relationship.
Object Recognition : Deterministic Methods, Clustering, Statistical Classification, Syntactic Recognition, Tree Search, Graph Matching

References

1. Rafael C. Gonzalvez and Richard E. Woods, Digital Image Processing 2nd Edition, Pearson Education.
2. R.J. Schalkoff, Digital Image Processing and Computer Vision, John Wiley and Sons, NY.
3. A.K. Jain, Fundamentals of Digital Image Processing,Prentice Hall, Upper Saddle River, NJ.

Revised syllabus (Effective from the session 2013-14)

ECS 806
MOBILE COMPUTING

MM : 100 **Sessional : 30**
Time : 3 Hr **ESE : 70**
L T P **Pass Marks : 40**
3 1 0

NOTE: Ten questions are to be set taking two questions from each unit. The student has to attempt FIVE questions selecting one question from each unit. The previous year papers / model paper can be used as a guideline and the following syllabus should be strictly followed while setting the question paper.

UNIT I

Introduction, issues in mobile computing, overview of wireless telephony: cellular concept, GSM: air-interface, channel structure, location management: HLR-VLR, hierarchical, handoffs, channel allocation in cellular systems, CDMA, GPRS.

UNIT II

Wireless Networking, Wireless LAN Overview: MAC issues, IEEE 802.11, Blue Tooth, Wireless multiple access protocols, TCP over wireless, Wireless applications, data broadcasting, Mobile IP, WAP: Architecture, protocol stack, application environment, applications.

UNIT III

Data management issues, data replication for mobile computers, adaptive clustering for mobile wireless networks, File system, Disconnected operations.

UNIT IV

Mobile Agents computing, security and fault tolerance, transaction processing in mobile computing environment.

UNIT V

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), Temporary ordered routing algorithm (TORA), QoS in Ad Hoc Networks, applications.

References

1. J. Schiller, Mobile Communications, Addison Wesley.
2. A. Mehrotra , GSM System Engineering.
3. M. V. D. Heijden, M. Taylor, Understanding WAP, Artech House.
4. Charles Perkins, Mobile IP, Addison Wesley.
5. Charles Perkins, Ad hoc Networks, Addison Wesley**.**

Revised syllabus (Effective from the session 2013-14)

ECS 807
NATURAL LANGUAGE PROCESSING

MM : 100 **Sessional : 30**
Time : 3 Hr **ESE : 70**
L T P **Pass Marks : 40**
3 1 0

NOTE: Ten questions are to be set taking two questions from each unit. The student has to attempt FIVE questions selecting one question from each unit. The previous year papers / model paper can be used as a guideline and the following syllabus should be strictly followed while setting the question paper.

UNIT I

Introduction to Natural Language Understanding: The study of Language, Applications of NLP, Evaluating Language Understanding Systems, Different levels of Language Analysis, Representations and Understanding, Organization of Natural language Understanding Systems, Linguistic Background: An outline of English syntax.

UNIT II

Introduction to semantics and knowledge representation, Some applications like machine translation, database interface.

UNIT III

Grammars and Parsing: Grammars and sentence Structure, Top-Down and Bottom-Up Parsers, Transition Network Grammars, Top-Down Chart Parsing. Feature Systems and Augmented Grammars: Basic Feature system for English, Morphological Analysis and the Lexicon, Parsing with Features, Augmented Transition Networks.

UNIT IV

Grammars for Natural Language: Auxiliary Verbs and Verb Phrases, Movement Phenomenon in Language, Handling questions in Context-Free Grammars. Human preferences in Parsing, Encoding uncertainty, Deterministic Parser.

UNIT V

Ambiguity Resolution: Statistical Methods, Probabilistic Language Processing, Estimating Probabilities, Part-of-Speech tagging, Obtaining Lexical Probabilities, Probabilistic Context-Free Grammars, Best First Parsing. Semantics and Logical Form, Word senses and Ambiguity, Encoding Ambiguity in Logical Form.

References

1. Akshar Bharti, Vineet Chaitanya and Rajeev Sangal, NLP: A Paninian Perspective, Prentice Hall, New Delhi
2. James Allen, Natural Language Understanding, 2/e, Pearson Education
3. D. Jurafsky, J. H. Martin, Speech and Language Processing, Pearson Education
4. L.M. Ivansca, S. C. Shapiro, Natural Language Processing and Language Representation
5. T. Winograd, Language as a Cognitive Process, Addison-Wesley

Revised syllabus (Effective from the session 2013-14)

ECS 808
REAL TIME SYSTEMS

MM : 100 **Sessional : 30**
Time : 3 Hr **ESE : 70**
L T P **Pass Marks : 40**
3 1 0

NOTE: Ten questions are to be set taking two questions from each unit. The student has to attempt FIVE questions selecting one question from each unit. The previous year papers / model paper can be used as a guideline and the following syllabus should be strictly followed while setting the question paper.

UNIT I

Introduction : Definition, Typical Real Time Applications: Digital Control, High Level Controls, Signal Processing etc., Release Times, Deadlines, and Timing Constraints, Hard Real Time Systems and Soft Real Time Systems, Reference Models for Real Time Systems: Processors and Resources, Temporal Parameters of Real Time Workload, Periodic Task Model, Precedence Constraints and Data Dependency.

UNIT II

Real Time Scheduling : Common Approaches to Real Time Scheduling: Clock Driven Approach, Weighted Round Robin Approach, Priority Driven Approach, Dynamic Versus Static Systems, Optimality of Effective-Deadline-First (EDF) and Least-Slack-Time-First (LST) Algorithms, Offline Versus Online Scheduling, Scheduling Aperiodic and Sporadic jobs in Priority Driven and Clock Driven Systems.

UNIT III

Resources Access Control : Effect of Resource Contention and Resource Access Control (RAC), Nonpreemptive Critical Sections, Basic Priority-Inheritance and Priority-Ceiling Protocols, Stack Based Priority-Ceiling Protocol, Use of Priority-Ceiling Protocol in Dynamic Priority Systems, Preemption Ceiling Protocol, Access Control in Multiple-Unit Resources, Controlling Concurrent Accesses to Data Objects.

UNIT IV

Multiprocessor System Environment : Multiprocessor and Distributed System Model, Multiprocessor Priority-Ceiling Protocol, Schedulability of Fixed-Priority End-to-End Periodic Tasks, Scheduling Algorithms for End-to-End Periodic Tasks, End-to-End Tasks in Heterogeneous Systems, Predictability and Validation of Dynamic Multiprocessor Systems, Scheduling of Tasks with Temporal Distance Constraints.

UNIT V

Real Time Communication : Model of Real Time Communication, Priority-Based Service and Weighted Round-Robin Service Disciplines for Switched Networks, Medium Access Control Protocols for Broadcast Networks, Internet and Resource Reservation Protocols, Real Time Protocols, Communication in Multicomputer System, An Overview of Real Time Operating Systems.

References

1. Jane W. S. Liu, Real Time Systems, Pearson Education Publication.
2. Prof. Albert M. K. Cheng, Real-Time Systems: Scheduling, Analysis, and Verification, John Wiley and Sons Publications.

Revised syllabus (Effective from the session 2013-14)

ECS 809
EMBEDDED SYSTEMS

MM : 100 **Sessional : 30**
Time : 3 Hr **ESE : 70**
L T P **Pass Marks : 40**
3 1 0

NOTE: Ten questions are to be set taking two questions from each unit. The student has to attempt FIVE questions selecting one question from each unit. The previous year papers / model paper can be used as a guideline and the following syllabus should be strictly followed while setting the question paper.

UNIT I

Introduction to embedded systems: Classification, Characteristics and requirements

UNIT II

Timing and clocks in Embedded systems, Task Modeling and management, Real time operating system issues.

UNIT III

Signals, frequency spectrum and sampling, digitization (ADC, DAC), Signal Conditioning and Processing. Modeling and Characterization of Embedded Computation System.

UNIT IV

Embedded Control and Control Hierarchy, Communication strategies for embedded systems: Encoding and Flow control.

UNIT V

Fault-Tolerance Formal Verification.

References

1. H.Kopetz, Real-Time Systems, Kluwer
2. R.Gupta, Co-synthesis of Hardware and Software for Embedded Systems, Kluwer

Revised syllabus (Effective from the session 2013-14)

ECS 810
ADVANCE COMPUTER ARCHITECTURE

MM : 100 **Sessional : 30**
Time : 3 Hr **ESE : 70**
L T P **Pass Marks : 40**
3 1 0

NOTE: Ten questions are to be set taking two questions from each unit. The student has to attempt FIVE questions selecting one question from each unit. The previous year papers / model paper can be used as a guideline and the following syllabus should be strictly followed while setting the question paper.

UNIT I

Pipelining: principles of linear pipelining; instruction pipelines- speedup, data dependency hazards, remedy measures, branch handling; Arithmetic pipelines; pipeline control- job sequencing and collision prevention, pipeline chaining; case studies of pipelined systems.

UNIT II

Vector Processing: Characteristics and requirements; pipelined vector processing; vectorization methods; vector processing in some systems Array Processing: SIMD array processors; communications; SIMD interconnection networks some algorithms for array processing.

UNIT III

Parallel Processing: Introduction, data and control parallelism, concurrency, scalability, speedup, Amdahl's law, PRAM model of parallel computation, parallel algorithms multiprocessors and multicomputers: Processor organizations- mesh, binary tree, hypercube etc.

UNIT IV

Shared Memory and Message Passing Systems: loosely and tightly coupled systems. Mapping and scheduling: Embedding of tasks graphs in processor graphs, dilation and loading; load balancing on multicomputers; deterministic and nondeterministic models for static scheduling

UNIT V

Dynamic Scheduling: prevention of deadlocks. Parallel programming languages: creation and programming of parallel processes; synchronization among processes; languages offering features for data parallelism such as C, FORTRAN 90; general MIMD programming languages.

References

1. Hwang K., Advanced Computer Architecture, McGraw Hill
2. Dasgupta, Subrata, Computer Architecture, A modern synthesis, John wiley
3. Stone, H.S., Introduction to Computer Architecture, McGraw Hill
4. Hwang K., Briggs, F.A., Computer Architecture and Parallel Processing, McGraw Hill

Revised syllabus (Effective from the session 2013-14)

ECS 860
MAJOR PROJECT

MM : 400 **Sessional : 100**
L T P **ESE : 300**
0 0 8 **Pass Marks : 160**

Each student shall be assigned a Major Project by departmental committee. The student shall be required to perform his project work under the supervision of the supervisor(s). There shall be a seminar on the project work of the student to be evaluated by a departmental committee chaired by H.O.D. The student shall be required to submit his project report in the form of dissertation 15 days before the end of VIII semester. The student shall be required to submit three copies of the project work with certificate from the supervisor(s) that the work is authentic record of the work performed by him. The report shall be forwarded by H.O.D. The report of the project work shall be evaluated by the external examiner(s). The same external examiner(s) shall hold the viva-voce examination.

THE DISTRIBUTION OF MARKS FOR THE MAJOR PROJECT SHALL BE AS FOLLOWS:

MAJOR PROJECT	
Project**	200
Viva-voce/Presentation**	100
Seminar (Internal)***	100
Total	400

** - Marks for the project work shall be awarded jointly by the external and internal examiners after viva-voce examination.

*** - There shall be a seminar on the project work of the student to be evaluated by the Departmental committee chaired by H.O.D.

Revised Syllabus (Effective from the session 2010-11)

Gurukula Kangri Vishwavidyalaya, Haridwar
Faculty of Engineering & Technology
Computer Science & Engineering

B.Tech. I Year

Semester - I

S.N.	Course Code	Subject	Periods			Evaluation Scheme				Subject Total
						Sessional Exam			EXAM ESE	
			L	T	P	CT	TA	Total		
THEORY										
1.	ECH101 /EPH101	Engineering Chemistry / Engineering Physics	3	1	0	20	10	30	70	100
2.	EMA101	Engineering. Mathematics– I	3	1	0	20	10	30	70	100
3.	EME101/ EEE101	Fundamental of Mechanical Engineering / Basic Electrical Engineering	3	1	0	20	10	30	70	100
4.	ECS101/ EEC101	Introduction to Computers & Programming in 'C' / Basic Electronics Engineering	3	1	0	20	10	30	70	100
5.	EHU101/ EHU102	Vedic Engineering / Technical Communication	3	1	0	20	10	30	70	100
6.	ENS101/ EME102	Environmental Studies* / Basic Manufacturing Process	2/3	0/1	2/0	20	10	30	70	100
PRACTICAL										
7.	ECH151/ EPH151	Engineering Chemistry Lab / Engineering Physics Lab	0	0	2	0	15	15	35	50
8.	EME151/ EEE151	Basic Mechanical Engineering Lab / Basic Electrical Engineering Lab	0	0	2	0	15	15	35	50
9.	ECS151/ EEC151	Computer Programming Lab / Basic Electronics Engineering Lab	0	0	2	0	15	15	35	50
10.	EME153/ EME152	Engineering Graphics / Workshop Practice	0	0	3/2	0	15	15	35	50
		TOTAL	17/ 18	5/6	11/ 8	120	120	240	560	800

* There shall be no sessional evaluation in the subject Environmental Studies (ENS101)and 30 marks out of 100 for this subject have been assigned for practical examination conducted by external examiner.

L- LECTURE; T- TUTORIAL; P- PRACTICAL;
CT-CUMULATIVE TEST; TA- TEACHER ASSESSMENT; ESE–END SEMESTER EXAMINATION

Revised Syllabus (Effective from the session 2010-11)

Gurukula Kangri Vishwavidyalaya, Haridwar
Faculty of Engineering & Technology
Computer Science & Engineering

B. Tech. I Year

Semester - II

S.N.	Course Code	Subject	Periods			Evaluation Scheme				Subject Total
						Sessional Exam			EXAM ESE	
			L	T	P	CT	TA	Total		
THEORY										
1.	EPH201/ ECH201	Engineering Physics/ Engineering Chemistry	3	1	0	20	10	30	70	100
2.	EMA201	Engineering Mathematics – II	3	1	0	20	10	30	70	100
3.	EEE201/ EME201	Basic Electrical Engineering / Fundamental of Mechanical Engineering	3	1	0	20	10	30	70	100
4.	EEC201/ ECS201	Basic Electronics Engineering / Introduction to Computers & Programming in 'C'	3	1	0	20	10	30	70	100
5.	EHU202/ EHU201	Technical Communication / Vedic Engineering	3	1	0	20	10	30	70	100
6.	EME202/ ENS201	Basic Manufacturing Process / Environmental Studies*	3/2	1/0	0/2	20	10	30	70	100
PRACTICAL										
7.	EPH251/ ECH251	Engineering Physics Lab /Engineering Chemistry Lab	0	0	2	0	15	15	35	50
8.	EEE251/ EME251	Basic Electrical Engineering Lab / Basic Mechanical Engineering Lab	0	0	2	0	15	15	35	50
9.	EEC251/ ECS251	Basic Electronics Engineering Lab / Computer Programming Lab	0	0	2	0	15	15	35	50
10.	EME252/ EME253	Workshop Practice / Engineering Graphics	0	0	2/3	0	15	15	35	50
		TOTAL	18/ 17	5/6	8/ 11	120	120	240	560	800

* There shall be no sessional evaluation in the subject Environmental Studies (ENS 201) and 30 marks out of 100 for this subject have been assigned for practical examination conducted by external examiner.

L- LECTURE; T- TUTORIAL; P- PRACTICAL;
CT-CUMULATIVE TEST; TA- TEACHER ASSESSMENT; ESE–END SEMESTER EXAMINATION

Revised Syllabus (Effective from the session 2010-11)

Gurukula Kangri Vishwavidyalaya, Haridwar
Faculty of Engineering & Technology
Computer Science & Engineering
B.Tech. II Year

Semester - III

S.N.	Course Code	Subject	Periods			Evaluation Scheme				Subject Total
						Sessional Exam			EXAM ESE	
			L	T	P	CT	TA	Total		
THEORY										
1.	ECS301/ ECS405	C & Data Structure	3	1	0	20	10	30	70	100
2.	EMA301	Engineering Mathematics- III	3	1	0	20	10	30	70	100
3.	ECS302	Computer Organization	3	1	0	20	10	30	70	100
4.	EEC302	Digital Electronics	3	1	0	20	10	30	70	100
5.	ECS303	System Analysis And Design	3	1	0	20	10	30	70	100
6.	EEE302/ EEE403	Network Analysis & Synthesis	3	1	0	20	10	30	70	100
PRACTICAL										
7.	ECS351/ ECS454	Data Structure Lab	0	0	2	0	15	15	35	50
8.	EHU351/ EHU651/ EHU551	Technical Communication Lab	0	0	2	0	15	15	35	50
9.	ECS352	Computer Organization Lab	0	0	2	0	15	15	35	50
10.	EEC352	Digital Electronics Lab	0	0	2	0	15	15	35	50
		TOTAL	18	6	8	120	120	240	560	800

L- LECTURE; T- TUTORIAL; P- PRACTICAL;
CT-CUMULATIVE TEST; TA- TEACHER ASSESSMENT; ESE–END SEMESTER EXAMINATION

Revised Syllabus (Effective from the session 2010-11)

Gurukula Kangri Vishwavidyalaya, Haridwar
Faculty of Engineering & Technology
Computer Science & Engineering

B.Tech. II Year

Semester - IV

S.N.	Course Code	Subject	Periods			Evaluation Scheme				Subject Total
						Sessional Exam			EXAM ESE	
			L	T	P	CT	TA	Total		
THEORY										
1.	ECS401	Software Engineering	3	1	0	20	10	30	70	100
2.	EMA401	Discrete Mathematics	3	1	0	20	10	30	70	100
3.	ECS402	Operating System	3	1	0	20	10	30	70	100
4.	EMA402	Numerical Analysis	3	1	0	20	10	30	70	100
5.	ECS403	Advance Data Structure	3	1	0	20	10	30	70	100
6.	ECS404/ ECS505	Object Oriented Programming Using C++	3	1	0	20	10	30	70	100
PRACTICAL										
7.	ECS451	Advance Data Structure Lab	0	0	2	0	15	15	35	50
8.	ECS452/ ECS554	Object Oriented Programming Lab	0	0	2	0	15	15	35	50
9.	EMA452	Numerical Analysis Lab	0	0	2	0	15	15	35	50
10.	ECS460	Seminar	0	0	2	0	50	50	0	50
		TOTAL	18	6	8	120	155	275	525	800

L- LECTURE; T- TUTORIAL; P- PRACTICAL;
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Faculty of Engineering & Technology
Computer Science & Engineering

B.Tech. III Year

Semester - V

S.N.	Course Code	Subject	Periods			Evaluation Scheme				Subject Total
						Sessional Exam			EXAM ESE	
			L	T	P	CT	TA	Total		
THEORY										
1.	ECS501	Core Java	3	1	0	20	10	30	70	100
2.	EHU501/ EHU601	Industrial Economics & Business Administration	3	1	0	20	10	30	70	100
3.	ECS502	System Software	3	1	0	20	10	30	70	100
4.	EEC505/ EEC402/ EEC605	Microprocessor and Microcontroller	3	1	0	20	10	30	70	100
5.	ECS503	Computer Graphics	3	1	0	20	10	30	70	100
6.	ECS504	Database Management System	3	1	0	20	10	30	70	100
PRACTICAL										
7.	ECS551	Java Programming Lab	0	0	2	0	15	15	35	50
8.	EEC553/ EEC451/ EEC654	Microprocessor and Microcontroller Lab	0	0	2	0	15	15	35	50
9.	ECS552	Computer Graphics Lab	0	0	2	0	15	15	35	50
10.	ECS553	DBMS Lab	0	0	2	0	15	15	35	50
		TOTAL	18	6	8	120	120	240	560	800

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Faculty of Engineering & Technology
Computer Science & Engineering

B.Tech. III Year

Semester - VI

S.N.	Course Code	Subject	Periods			Evaluation Scheme				Subject Total
						Sessional Exam			EXAM ESE	
			L	T	P	CT	TA	Total		
THEORY										
1.	ECS601	Theory of Automata and Formal Languages	3	1	0	20	10	30	70	100
2.	ECS602	Advance Java	3	1	0	20	10	30	70	100
3.	ECS603	Design & Analysis of Algorithms	3	1	0	20	10	30	70	100
4.	ECS604/ ECS705	Computer Network	3	1	0	20	10	30	70	100
5.	ECS605	Artificial Intelligence	3	1	0	20	10	30	70	100
6.	ECS606	.net Technologies	3	1	0	20	10	30	70	100
PRACTICAL										
7.	ECS651	Advance Java Lab	0	0	2	0	15	15	35	50
8.	ECS652	.net Technologies Lab	0	0	2	0	15	15	35	50
9.	ECS660	'C' Project Lab	0	0	2	0	30	30	70	100
		TOTAL	18	6	8	120	120	240	560	800

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Faculty of Engineering & Technology
Computer Science & Engineering

B.Tech. IV Year

Semester - VII

S.N.	Course Code	Subject	Periods			Evaluation Scheme				Subject Total
						Sessional Exam			EXAM ESE	
			L	T	P	CT	TA	Total		
THEORY										
1.	ECS701	Compiler Design	3	1	0	20	10	30	70	100
2.	EMA701	Optimization Techniques	3	1	0	20	10	30	70	100
3.	ECS702	Cryptography & Network Security	3	1	0	20	10	30	70	100
4.	ECS703	UNIX and Shell Programming	3	1	0	20	10	30	70	100
5.	ECS704	Visual Programming	3	1	0	20	10	30	70	100
PRACTICAL										
6.	ECS751	UNIX Lab	0	0	2	0	15	15	35	50
7.	ECS752	Visual Programming Lab	0	0	2	0	15	15	35	50
8.	ECS760	Minor Project	0	0	4	0	50	50	150	200
		TOTAL	15	5	8	100	130	230	570	800

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Faculty of Engineering & Technology
Computer Science & Engineering

B.Tech. IV Year

Semester - VIII

S.N.	Course Code	Subject	Periods			Evaluation Scheme				Subject Total
						Sessional Exam			EXAM ESE	
			L	T	P	CT	TA	Total		
THEORY										
1.	ECS801	Advance Database	3	1	0	20	10	30	70	100
2.	ECS802	Advance Computer Network	3	1	0	20	10	30	70	100
3.		Elective-I	3	1	0	20	10	30	70	100
4.		Elective-II	3	1	0	20	10	30	70	100
PRACTICAL										
5.	ECS860	Major Project	0	0	8	0	100	100	300	400
		TOTAL	12	4	8	80	140	220	580	800

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SEMESTER-VIII

Elective 1:

S. No	CODE	SUBJECT
1.	ECS 803	Parallel Algorithms
2.	ECS 804	E-Commerce
3.	ECS 805	Digital Image Processing
4.	ECS 806	Mobile Computing

Elective 2:

S. No	CODE	SUBJECT
1.	ECS 807	Natural Language Processing
2.	ECS 808	Real Time Systems
3.	ECS 809	Embedded System
4.	ECS 810	Advance Computer Architecture

NOTE: Electives will be offered depending upon the availability of teaching staff and minimum thirty students should opt for a particular elective.