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
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:

<table>
<thead>
<tr>
<th>PRACTICAL EXAMINATION</th>
<th>MINOR PROJECT</th>
<th>MAJOR PROJECT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Experiment/programming</td>
<td>20 Project**</td>
<td>100 Project**</td>
</tr>
<tr>
<td>Viva-voce</td>
<td>15 Viva-voce/Presentation**</td>
<td>50 Viva-voce/Presentation**</td>
</tr>
<tr>
<td>Record*</td>
<td>15 Seminar (Internal)***</td>
<td>50 Seminar (Internal)***</td>
</tr>
<tr>
<td>Total</td>
<td>50 Total</td>
<td>200 Total</td>
</tr>
</tbody>
</table>

* - 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

<table>
<thead>
<tr>
<th>S.N.</th>
<th>Course Code</th>
<th>Subject</th>
<th>Periods</th>
<th>Evaluation Scheme</th>
<th>Subject Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>L</td>
<td>T</td>
<td>P</td>
</tr>
<tr>
<td>1.</td>
<td>ECH101/EPH101</td>
<td>Engineering Chemistry / Engineering Physics</td>
<td>3</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>2.</td>
<td>EMA101</td>
<td>Engineering Mathematics – I</td>
<td>3</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>3.</td>
<td>EME101 /EEE101</td>
<td>Fundamental of Mechanical Engineering / Basic Electrical Engineering</td>
<td>3</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>4.</td>
<td>ECS101 /EEC101</td>
<td>Introduction to Computers &amp; Programming in ‘C’ / Basic Electronics Engineering</td>
<td>3</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>5.</td>
<td>EHU101/EHU102</td>
<td>Vedic Engineering / Technical Communication</td>
<td>3</td>
<td>1</td>
<td>0</td>
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<tr>
<td>6.</td>
<td>ENS101 /EME102</td>
<td>Environmental Studies* / Basic Manufacturing Process</td>
<td>2/3</td>
<td>0/1</td>
<td>2/0</td>
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</table>

### PRACTICAL

<table>
<thead>
<tr>
<th>S.N.</th>
<th>Course Code</th>
<th>Subject</th>
<th>Periods</th>
<th>Evaluation Scheme</th>
<th>Subject Total</th>
</tr>
</thead>
<tbody>
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<td></td>
<td>L</td>
<td>T</td>
<td>P</td>
</tr>
<tr>
<td>7.</td>
<td>ECH151/EPH151</td>
<td>Engineering Chemistry Lab / Engineering Physics Lab</td>
<td>0</td>
<td>0</td>
<td>2</td>
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<td>8.</td>
<td>EME151/EEE151</td>
<td>Basic Mechanical Engineering Lab / Basic Electrical Engineering Lab</td>
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<td>0</td>
<td>2</td>
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<tr>
<td>9.</td>
<td>ECS151/EEC151</td>
<td>Computer Programming Lab / Basic Electronics Engineering Lab</td>
<td>0</td>
<td>0</td>
<td>2</td>
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<tr>
<td>10.</td>
<td>EME153/EME152</td>
<td>Engineering Graphics / Workshop Practice</td>
<td>0</td>
<td>0</td>
<td>3/2</td>
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<td>17/18</td>
<td>5/6</td>
<td>11/8</td>
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</tbody>
</table>

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

* 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
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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
Phase Rule: Gibbs phase rule (without derivation). Applications of Phase rule to one component system (H₂O and S) and two component system (KI- H₂O system).

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.

UNIT III
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).

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.
Revised syllabus (Effective from the session 2010-11)

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

**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.

**References**

1. Principales of Physical chemistry : B.R. Puri, L.R. Sharma, M. Pathania
2. Advanced inorganic chemistry : Cotton
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
Revised syllabus (Effective from the session 2010-11)
Revised syllabus (Effective from the session 2010-11)

EMA 101
ENGINEERING MATHEMATICS I

MM : 100
Time : 3 hrs
L T P       Pass Marks : 40
3 1 0

Sessional : 30
ESE : 70

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

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.

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.

UNIT IV

UNIT V

References
1. Prasad C., A first course in mathematics for Engineers, Prasad Mudranalaya

Faculty of Engineering & Technology, GKV, Haridwar             Computer Science & Engineering
Revised syllabus (Effective from the session 2010-11)

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
Time : 3 hrs
L T P
3 1 0

Sessional : 30
ESE : 70
Pass Marks : 40

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.

Number 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 comma operator, goto statement.
Loops: while, do-while, for loop.

UNIT IV


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.
Revised syllabus (Effective from the session 2010-11)

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 of 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
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
Revised syllabus (Effective from the session 2010-11)

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.
Revised syllabus (Effective from the session 2010-11)

ENS 101/ ENS 201
ENVIRONMENTAL STUDIES

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

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

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
Revised syllabus (Effective from the session 2010-11)

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


References
Revised syllabus (Effective from the session 2010-11)

ECH 151/ ECH 251
ENGINEERING CHEMISTRY LAB

MM : 50
Time : 2 hrs
L  T  P
0    0   2

Sessional: 15
ESE: 35
Pass Marks: 20

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 the turbidity of given solution/water sample by turbidimeter.
6. Determine the angle of rotation of given solution by using polarimeter.
7. Determine the distribution constant for the distribution of I₂ between CCl₄ and water.
8. Separate the given mixture indicator by using TLC.
9. Separate the given mixture by using paper chromatography.
10. Determine the refractive index of given liquid by using Abbe’s refractrometer.
11. Determine conductivity of given compound.
12. Determine absorption maxima and concentration of given KMnO₄ solution.
13. To observe fluorescence of fluorescent materials.
14. Determine acid value of given oil sample.
15. Determine iodine value of given oil sample.

REFERENCES

1. Advanced practical physical chemistry : J.B. Yadav
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.
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.
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.
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.
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.
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Revised syllabus (Effective from the session 2010-11)

EPH 101/ EPH 201
ENGINEERING PHYSICS

MM: 100  
Time: 3 hrs  
L  T  P  
3  1  0

Sessional: 30  
ESE: 70  
Pass Marks: 40

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


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.

UNIT III


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.

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.
Revised syllabus (Effective from the session 2010-11)

References
5. Beiser Arthur, Concepts of Modern Physics, TMH, New Delhi, 1999
6. Mani HS, Modern Physics, New Delhi, 1999
8. Murugesan R (8/e), Modern Physics, S.Chand, New Delhi, 2001
10. Schiff (3/e), Quantum Mechanics, McGraw, Auckland
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.

UNIT II

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.

UNIT IV
Fourier Series : Fourier series, Dirichlet’s condition and convergence. Half range series, Harmonic analysis.

UNIT V

References
3. Prasad C., Advanced Mathematics for Engineers, Prasad Mudranalaya
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

UNIT II
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.

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.

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

Text Books
3.  E. Huges, Electrical Technology.

References
1.  B. L., Theraja, Electrical Technology, Vol-1, S. Chand Publisher, New Delhi.
Revised syllabus (Effective from the session 2010-11)

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 following text readings
   i) The Heritage of India by AL Basham
Revised syllabus (Effective from the session 2010-11)

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

Recommended Books
2. Balasubramaniam, T. Phonetics for Indian Students. Macmillan India Ltd.

Dictionaries
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

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
4. Degarmo, Materials and Processes in Manufacturing, PHI, New Delhi, 2000
5. Begmen, Manufacturing Processes

Faculty of Engineering & Technology, GKV, Haridwar
Computer Science & Engineering
Revised syllabus (Effective from the session 2010-11)

EPH 151/ EPH 251
ENGINEERING PHYSICS LAB

MM : 50
Time : 2 hrs
L T P  Pass Marks: 20
0 0 2

SESSIONAL: 15
ESE: 35

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.
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.
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
Time : 2 hrs
L   T   P
0    0   2

Sessional: 15
ESE: 35
Pass Marks: 20

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.
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Revised Syllabus (Effective from the session 2011-12)
Gurukula Kangri Vishwavidyalaya, Haridwar
Faculty of Engineering & Technology
Computer Science & Engineering

B.Tech. II Year

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**PRACTICAL**

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**TOTAL**

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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

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**PRACTICAL**

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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
3 1 0
Pass Marks : 40

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 Pointers.

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


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


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.
Revised syllabus (Effective from the session 2011-12)

References

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.
Revised syllabus (Effective from the session 2011-12)

EMA 301
ENGINEERING MATHEMATICS – III

MM : 100
Time : 3 Hr
L T P
3 1 0

Pass Marks : 40

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

UNIT II

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

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 $\int_{0}^{2\pi} f(\cos \theta, \sin \theta) d\theta$ 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
4. Brancewel, Fourier Transforms and their applications, McGraw
Revised syllabus (Effective from the session 2011-12)

ECS 302
COMPUTER ORGANIZATION

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<th>Sessional : 30</th>
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<td>Pass Marks : 40</td>
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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

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

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


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


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.

Revised syllabus (Effective from the session 2011-12)

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
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
2. D. Roy Chaudhary, Networks and Systems, Wiley Eastern Ltd.

Reference Books
Revised syllabus (Effective from the session 2011-12)

ECS 351/ ECS 454
DATA STRUCTURE LAB

MM : 50
Time : 2Hr
L  T  P
0  0  2

Sessional : 15
ESE : 35
Pass Marks : 20

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.
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
0 0 2
Pass Marks : 20

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
Balasubramaniam, T. Phonetics for Indian Students. Macmillan India Ltd.
Krishnaswamy, N. “Modern English. Macmillan India Ltd.
Mohan, Krishna & Banerji, Meera. Developing Communication Skill. Macmillan India Ltd.

DICTIONARIES
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
Time : 2Hr
L  T  P
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.
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
Time : 3 Hr
L T P
3 1 0

Sessional : 30
ESE : 70
Pass Marks : 40

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

EMA 401  
DISCRETE MATHEMATICS

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

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

UNIT II

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

UNIT V

References
2. Liu, C.L(2/e), Elements of Discrete Mathematics, TMH, New Delhi, 2000
Revised syllabus (Effective from the session 2011-12)

ECS 402
OPERATING SYSTEM

MM : 100
Time : 3 Hr
L T P 3 1 0

Sessional : 30
ESE : 70
Pass Marks : 40

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


UNIT II


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


UNIT V

Revised syllabus (Effective from the session 2011-12)

References

Revised syllabus (Effective from the session 2011-12)

EMA 402
NUMERICAL ANALYSIS

MM : 100
Time : 3 Hr
L  T  P
3  1  0

Sessional : 30
ESE : 70
Pass Marks : 40

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

UNIT II
Linear Simultaneous Algebraic Equations: Method of Gauss elimination, LU -decomposition Jacobi’s and Gauss- Seidal methods, Largest eigen value and corresponding eigen vector (Powers method).

UNIT III

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

UNIT V

References
2. Grewal, B.S., Numerical Methods in Engineering & Sciences, Khanna, New Delhi,
3. Sastry B., Introductory Method of Numerical Analysis, PHI
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

UNIT III

UNIT IV

UNIT V

References
1. Narsingh Deo-Graph, Theory with Application to Engineering and Computer Science,Prentice Hall of India.
Revised syllabus (Effective from the session 2011-12)

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

MM : 100
Time : 3 Hr
L T P
3 1 0

Sessional : 30
ESE : 70
Pass Marks : 40

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


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
Time : 2Hr
L  T  P
0  0  2

Sessional : 15
ESE : 35
Pass Marks : 20

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.
8. Implementation of Breadth First Search.
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. Picard's 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 them 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

<table>
<thead>
<tr>
<th>S.N.</th>
<th>Course Code</th>
<th>Subject</th>
<th>Periods</th>
<th>Evaluation Scheme</th>
<th>Subject Total</th>
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<td></td>
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<tr>
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<td>Core Java</td>
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<td>2.</td>
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<td>4.</td>
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<td>Microprocessor and Microcontroller</td>
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<td>Database Management System</td>
<td>3</td>
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**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**

### Faculty of Engineering & Technology  
**Computer Science & Engineering**

<table>
<thead>
<tr>
<th>S.N.</th>
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<td>ECS603</td>
<td>Design &amp; Analysis of Algorithms</td>
<td>3 1 0</td>
<td>20 10 30</td>
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<td>4.</td>
<td>ECS604/ ECS705</td>
<td>Computer Network</td>
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<td>5.</td>
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<td>.net Technologies</td>
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<td>20 10 30</td>
<td>70 100</td>
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### PRACTICAL

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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

<table>
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<th>MM : 100</th>
<th>Time : 3 Hr</th>
<th>Sessional : 30</th>
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<td>ESE : 70</td>
<td>Pass Marks : 40</td>
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</table>

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.
Revised syllabus (Effective from the session 2012-13)

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**

3. H.M.Dietel and P.J.Dietel, Java How to Program, Pearson Education/PHI
5. Cay.S.Horstmann and Gary Cornell, Core Java 2- Advanced Features, Pearson Education.
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

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
5. Singh S.P. "Industrial Economics & Management" AITBS, New Delhi, 2006
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
2. Ram, B.---Microprocessor and Application-Dhanpatrai Pub.
Revised syllabus (Effective from the session 2012-13)

ECS 502
SYSTEM SOFTWARE

MM : 100
Time : 3 Hr
L  T  P
3   1   0

Sessional : 30
ESE : 70
Pass Marks : 40

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

UNIT II

UNIT III

UNIT IV

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
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


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
**Revised syllabus (Effective from the session 2012-13)**

**ECS 504**  
**DATABASE MANAGEMENT SYSTEM**

<table>
<thead>
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<th>Component</th>
<th>Credits</th>
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<td><strong>ESE</strong> : 70</td>
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<tr>
<td><strong>L T P</strong></td>
<td>3 1 0</td>
<td><strong>Pass Marks</strong> : 40</td>
</tr>
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</table>

**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.
Revised syllabus (Effective from the session 2012-13)

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

References

1. Date C.J., An Introduction to Database System, Addison Wesley.
6. Majumdar & Bhattacharya, Database Management System, TMH.
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 Bars, Frames, and Menus using swing/AWT.
7. Using Java create Applets.
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.
Revised syllabus (Effective from the session 2012-13)

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.
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

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).
8. Implementation of Polygon Clipping using Sutherland-Hodgman algorithm.
10. Implementation of Curve generation using Interpolation methods.
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.
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 
Time : 3 Hr
L T P 
3 1 0
Sessional : 30
ESE : 70
Pass Marks : 40

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


UNIT II


UNIT III


UNIT IV


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

Faculty of Engineering & Technology, GKV, Haridwar Computer Science & Engineering
Revised syllabus (Effective from the session 2012-13)

ECS 602
ADVANCE JAVA

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

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


References
1. Marty and Hall, Core Servlets and JSP, Prentice Hall and Sun Microsystems Press.
2. Complete Reference JSP, TMH
3. Deitel & 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
3. Mchugh J.A., Algorithmic Graph Theory, PHI
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
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

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
5. D. Minoli, Internet & Intranet Engineering, TMH

Faculty of Engineering & Technology, GKV, Haridwar                     Computer Science & Engineering
Revised syllabus (Effective from the session 2012-13)

ECS 605
ARTIFICIAL INTELLIGENCE

MM : 100
Time : 3 Hr
L  T  P
3  1  0

Sessional : 30
ESE : 70
Pass Marks : 40

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

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. Liroyed, 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
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

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.
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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

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

SEMESTER-VIII

Faculty of Engineering & Technology, GKV, Haridwar
Computer Science & Engineering
Revised Syllabus (Effective from the session 2013-14)
Gurukula Kangri Vishwavidyalaya, Haridwar
Faculty of Engineering & Technology
Computer Science & Engineering

Elective 1:

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<td>ECS 803</td>
<td>Parallel Algorithms</td>
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<td>2.</td>
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<td>3.</td>
<td>ECS 805</td>
<td>Digital Image Processing</td>
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<td>4.</td>
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<td>Mobile Computing</td>
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Elective 2:

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<tr>
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<td>Natural Language Processing</td>
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<td>2.</td>
<td>ECS 808</td>
<td>Real Time Systems</td>
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<td>4.</td>
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*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
Time : 3 Hr
L  T  P
3  1  0
Sessional : 30
ESE : 70
Pass Marks : 40

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

2. V. Aho, R. Sethi and J.D. Ullman, Compiler: Principle, Techniques and Tools, AW.
Revised syllabus (Effective from the session 2013-14)

EMA 701

OPTIMIZATION TECHNIQUES

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

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.

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.

UNIT III


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.

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.

References
2. Kanti Swarup, P.K. Gupta, Man Mohan Operations Research, (Sultan Chand & Sons)
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
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, Diffie-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).

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

UNIT V
System Security: Intruders, Viruses and related threads, firewall design principals, trusted systems.
Revised syllabus (Effective from the session 2013-14)

References

3. Bruce Schiener, Applied Cryptography
Revised syllabus (Effective from the session 2013-14)

ECS 703
UNIX AND SHELL PROGRAMMING

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

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.

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 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 modes 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.
3. Yashwant Kanitkar, Unix Shell Programming, BPB.
5. Rachel Morgan, Henry McGilton, Introducing Unix System V, TMH.
Revised syllabus (Effective from the session 2013-14)

ECS 704
VISUAL PROGRAMMING

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

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

UNIT II

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

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
2. Davis Chapman, Visual C++ Programming, SAMS Publications
Revised syllabus (Effective from the session 2013-14)

ECS 751
UNIX LAB

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

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.
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.
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.
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.
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:

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<td>Seminar (Internal)***</td>
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** - 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

UNIT II

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
2. Setrag Khos Shafian, Object Oriented Databases, John Wiley & Sons Inc., 1993
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

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
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

<table>
<thead>
<tr>
<th>S. No</th>
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<tr>
<td>1.</td>
<td>ECS 803</td>
<td>Parallel Algorithms</td>
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<td>E-Commerce</td>
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<td>ECS 805</td>
<td>Digital Image Processing</td>
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<td>4.</td>
<td>ECS 806</td>
<td>Mobile Computing</td>
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<tr>
<td>1.</td>
<td>ECS 807</td>
<td>Natural Language Processing</td>
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<td>2.</td>
<td>ECS 808</td>
<td>Real Time Systems</td>
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<td>4.</td>
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<td>Advance Computer Architecture</td>
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**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, Cost-optimality, 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
2. S.G. Akl, Design and Analysis of Parallel Algorithms
Revised syllabus (Effective from the session 2013-14)

ECS 804
E-COMMERCE

MM : 100
Time : 3 Hr
L T P
3 1 0

Sessional : 30
ESE : 70
Pass Marks : 40

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

Internet as Network Infrastructure: Internet Terminology, History of Internet, NSFNET, National Research and Educational Network, Globalization of Academic Internet, Internet Applications.

UNIT II

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
Revised syllabus (Effective from the session 2013-14)


UNIT V


References

1. Ravi Kalokaota and A.B. Whinston, Frontiers of Electronic Commerce, 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


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.


UNIT IV

Registration: Introduction, Geometric Transformation – Plane to Plane transformation, Mapping, Stereo Imaging – Algorithms to Establish Correspondence, Algorithms to Recover Depth
Revised syllabus (Effective from the session 2013-14)


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
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

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.
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
3  1  0
Pass Marks : 40

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

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

UNIT III

UNIT IV

UNIT V

References
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

UNIT II

UNIT III

UNIT IV

UNIT V

References
Revised syallabus (Effective from the session 2013-14)

ECS 809
EMBEDDED SYSTEMS

MM : 100
Time : 3 Hr
L  T  P
3  1  0

Sessional : 30
ESE : 70
Pass Marks : 40

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 syallabus 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
Time : 3 Hr
L  T  P
3 1 0

Sessional : 30
ESE : 70
Pass Marks : 40

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
2. Dasgupta, Subrata, Computer Architecture, A modern synthesis, John wiley
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:

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<tr>
<td>Viva-voce/Presentation**</td>
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<tr>
<td>Seminar (Internal)**</td>
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** - 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**

<table>
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* 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. 1 Year**

## Semester - II

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**THEORY**

1. EPH201/ ECH201 Engineering Physics/ Engineering Chemistry  
   Periods: 3 1 0 20 10 30 70 100

2. EMA201 Engineering Mathematics – II  
   Periods: 3 1 0 20 10 30 70 100

3. EEE201/ EME201 Basic Electrical Engineering / Fundamental of Mechanical Engineering  
   Periods: 3 1 0 20 10 30 70 100

4. EEC201/ ECS201 Basic Electronics Engineering / Introduction to Computers & Programming in ‘C’  
   Periods: 3 1 0 20 10 30 70 100

5. EHU202/ EHU201 Technical Communication / Vedic Engineering  
   Periods: 3 1 0 20 10 30 70 100

6. EME202/ ENS201 Basic Manufacturing Process / Environmental Studies*  
   Periods: 3/2 1/0 0/2 20 10 30 70 100

**PRACTICAL**

7. EPH251/ ECH251 Engineering Physics Lab /Engineering Chemistry Lab  
   Periods: 0 0 2 0 15 15 35 50

8. EEE251/ EME251 Basic Electrical Engineering Lab / Basic Mechanical Engineering Lab  
   Periods: 0 0 2 0 15 15 35 50

9. EEC251/ ECS251 Basic Electronics Engineering Lab / Computer Programming Lab  
   Periods: 0 0 2 0 15 15 35 50

10. EME252/ EME253 Workshop Practice / Engineering Graphics  
    Periods: 0 0 2/3 0 15 15 35 50

**TOTAL**  
L: LECTURE; T: TUTORIAL; P: PRACTICAL; CT: CUMULATIVE TEST; TA: TEACHER ASSESSMENT; ESE: END SEMESTER EXAMINATION

* 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.

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* Faculty of Engineering & Technology, GKV, Haridwar  
Computer Science & Engineering
Revised Syllabus (Effective from the session 2010-11)
Gurukula Kangri Vishwavidyalaya, Haridwar
Faculty of Engineering & Technology
Computer Science & Engineering
B.Tech. II Year

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| 7.   | ECS351/    | Data Structure Lab | 0 | 0 | 2 | 0 | 15 | 15 | 35 | 50 |       |
|      | ECS454     |          |     |     |   |     |     |     |     |     |       |
| 8.   | EHU351/    | Technical Communication Lab | 0 | 0 | 2 | 0 | 15 | 15 | 35 | 50 |       |
|      | EHU651/    |          |     |     |   |     |     |     |     |     |       |
|      | EHU551     |          |     |     |   |     |     |     |     |     |       |
| 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

<table>
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### THEORY

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### PRACTICAL

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| 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

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Facility of Engineering & Technology, GKV, Haridwar  
Computer Science & Engineering
**Revised Syllabus (Effective from the session 2010-11)**

**Gurukula Kangri Vishwavidyalaya, Haridwar**

**Faculty of Engineering & Technology**

**Computer Science & Engineering**

---

**B.Tech. III Year**

**Semester - V**

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**PRACTICAL**

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**TOTAL: 560**

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

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*Faculty of Engineering & Technology, GKV, Haridwar*  
*Computer Science & Engineering*
# Revised Syllabus (Effective from the session 2010-11)

**Gurukula Kangri Vishwavidyalaya, Haridwar**

**Faculty of Engineering & Technology**

**Computer Science & Engineering**

---

**B.Tech. III Year**

## Semester - VI

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*Faculty of Engineering & Technology, GKV, Haridwar Computer Science & Engineering*
## Revised Syllabus (Effective from the session 2010-11)

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

### B.Tech. IV Year

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L- LECTURE;  
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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. IV Year

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Elective 2:

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