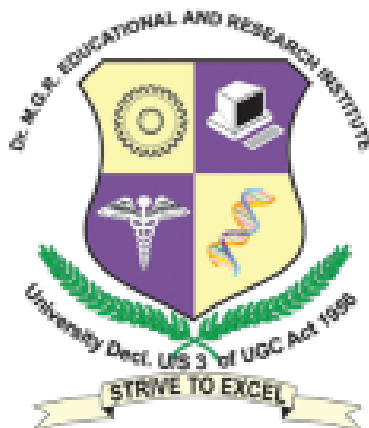


**Dr. M.G.R**  
**EDUCATIONAL AND RESEARCH INSTITUTE**  
**UNIVERSITY**

(Estd. Under Sec (3) of UGC Act 1956)  
EVR Periyar Salai, Maduravoyal, Chennai 95.



**B.Sc (COMPUTER SCIENCE)**

*Curriculum & Syllabus*

*Regulation – 2013*



## B.Sc (Computer Science) Curriculum and Syllabus

<b>Semester - I - Theory</b>						
Sub. Code	Subject Name	L	T	P	C	Page No.
HBTA14001 / HBHI14001 / HBFR14001	Tamil - I / Hindi - I / French - I	3	0	0	3	1
<b>HBEN14001</b>	English - I	3	0	0	3	4
<b>HBMA14A04</b>	Allied - I : Mathematics - I	3	1	0	4	6
<b>HBCA14G02</b>	Office Automation	3	0	0	3	7
<b>HBCS14G01</b>	Fundamentals of Programming	3	1	0	4	8
<b>Practical</b>						
<b>HBCA14L01</b>	PC Software Lab	0	0	3	1	9
<b>HBCS14L01</b>	Fundamentals of Programming Lab	0	0	3	1	10
<b>HBMG14L01</b>	Soft Skills - I	0	0	6	2	11
<b>1<sup>st</sup> Semester Credits</b>						<b>21</b>

<b>Semester - II - Theory</b>						
Sub. Code	Subject Name	L	T	P	C	Page No.
HBTA14002 / HBHI14002 / HBFR14002	Tamil - II / Hindi - II / French - II	3	0	0	3	13
<b>HBEN14002</b>	English - II	3	0	0	3	16
<b>HBMA14A05</b>	Allied - I : Mathematics - II	3	1	0	4	18
<b>HBCS14G02</b>	Object Oriented Programming	3	1	0	4	19
<b>HBCS14G03</b>	Data Structure	3	1	0	4	20
<b>Practical</b>						
<b>HBCS14L02</b>	Object Oriented Programming Lab	0	0	3	1	21
<b>HBCS14L03</b>	Data Structure Lab	0	0	3	1	22
<b>HBMG14L02</b>	Soft Skills - II	0	0	6	2	23
<b>2<sup>nd</sup> Semester Credits</b>						<b>22</b>

<b>Semester - III - Theory</b>						
Sub. Code	Subject Name	L	T	P	C	Page No.
<b>HBPH14A01</b>	Allied - II : Applied Physics - I	3	1	0	4	25
<b>HBCS14G04</b>	Programming in Java	3	1	0	4	26
<b>HBCS14G05</b>	Operating System	3	1	0	4	27
<b>HBCS14G06</b>	Computer Architecture and Organization	3	0	0	3	28
<b>HBCS14G07</b>	Computer Networks	3	0	0	3	29
<b>Practical</b>						
<b>HBCS14L04</b>	Programming in Java Lab	0	0	3	1	30
<b>HBCS14L05</b>	Operating System Lab	0	0	3	1	31
<b>HBCS14L06</b>	Internship	0	0	3	1	
<b>3<sup>rd</sup> Semester Credits</b>						<b>21</b>

<b>Semester - IV - Theory</b>						
<b>Sub. Code</b>	<b>Subject Name</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>	<b>Page No.</b>
<b>HBPH14A02</b>	Allied - II : Applied Physics - II	3	1	0	4	32
<b>HBCS14G08</b>	Data Base Management System	3	1	0	4	33
<b>HBCA14G15</b>	Computer Graphics	3	0	0	3	34
<b>HBCS14G09</b>	Visual Basic	3	0	0	3	35
	Elective - I	3	0	0	3	-
<b>Practical</b>						
<b>HBCS14L07</b>	Visual Basic & DBMS Lab	0	0	3	1	36
<b>HBCS14L08</b>	Computer Graphics Lab	0	0	3	1	37
<b>HBPH14L01</b>	Applied Physics Lab	0	0	3	1	38
<b>4<sup>th</sup> Semester Credits</b>					<b>20</b>	

<b>Semester - V – Theory</b>						
<b>Sub. Code</b>	<b>Subject Name</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>	<b>Page No.</b>
<b>HBCS14G10</b>	C# Dot Net	3	1	0	4	39
<b>HBCS14G11</b>	Web Design	3	1	0	4	40
<b>HBCS14G12</b>	Software Engineering	3	0	0	3	41
<b>HBMG14001</b>	Environmental Studies	3	0	0	3	43
	Elective - II	3	0	0	3	-
<b>Practical</b>						
<b>HBCS14L09</b>	C# Dot Net Lab	0	0	3	1	45
<b>HBCS14L10</b>	Web Design Lab	0	0	3	1	46
<b>5<sup>th</sup> Semester Credits</b>					<b>19</b>	

<b>Semester - VI – Theory</b>						
<b>Sub. Code</b>	<b>Subject Name</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>	<b>Page No.</b>
<b>HBCS14G13</b>	E-Commerce	3	1	0	4	47
<b>HBCS14G14</b>	Data Mining	3	1	0	4	48
<b>HBMG14G01</b>	Entrepreneurship Development	3	0	0	3	49
<b>HBCS14G15</b>	Mobile Communication	3	0	0	3	50
	Elective - III	3	0	0	3	-
<b>Practical</b>						
<b>HBCS14P01</b>	Project	0	0	12	10	51
<b>6<sup>th</sup> Semester Credits</b>					<b>27</b>	



	<b>Tamil I</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
		3	0	0	3

**முதல்பருவம் - தமிழ்த்தாள் I**

அலகு - 1

செய்யுள் திரட்டு

வாய்மொழி இலக்கியம்: நாட்டுப்புறப்பாடல்கள்

1. தாலாட்டு
2. காதல்
3. ஒப்பாரி
4. காணி நிலம் வேண்டும் - பாரதி
5. நல்லதோர் வீணை - பாரதி
6. தமிழக்காதல் - பாரதிதாசன்
7. தமிழ் வளர்ச்சி - பாரதிதாசன்
8. எந்நாளோ - பாரதிதாசன்
9. ஆறு தன் வரலாறு கூறுதல் - கவிமணி தேசிய விநாயகம் பிள்ளை

அலகு - 2

10. வழித்துணை - நா. பிச்சமுர்த்தி
11. முள் முள் முள் - சிற்பி
12. குருடர்களின் யானை - அப்துல் ரகுமான்

அலகு - 3 (புதுமைப்பித்தன் சிறுகதைகள்)

1. கடவுளும் கந்தசாமிப் பிள்ளையும்
2. செல்லம்மா
3. துன்பக் கேணி
4. ஆற்றங்கரைப் பிள்ளையார்
5. ஒரு நாள் கழிந்தது

அலகு - 4 இலக்கணம்

பெயர், வினை, இடை, உரிச்சொற்களின் பொது இலக்கணம், வல்லினம் மிகு இடங்கள், மிகா இடங்கள்

அலகு - 5 (இலக்கிய வரலாறு)

1. தமிழ்க்கவிதையின் தோற்றமும் வளர்ச்சியும் (மரபுக் கவிதைகள், புதுக் கவிதைகள்)
2. தமிழ்ச் சிறுகதையின் தோற்றமும் வளர்ச்சியும்

மொழிப் பயிற்சி

மரபுத் தொடர்கள், பொருந்திய சொல் தருதல், கலைச்சொற்கள், நேர்காணல்.

மேற்பார்வை நூல்கள்:

1. சென்னைப் பல்கலைக் கழக வெளியீடு - 2013
2. பொது இலக்கணம்

HBHI14001	HINDI-I	3	0	0	3
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Unit wise Hindi syllabus

SEMESTER I, Part I - ~~Part I~~ I

Prose, Administrative Hindi and Grammer.

**UNIT I**

1. Sabhyata kaa rahasya – lesson and annotations ,Questions & answers,
2. Administrative terms ( Prayojan mulak Hindi)

**Unit II**

1. Mitratha ka rahasya - lesson and annotations questions and answers
2. Patra lekhan, definitions, correspondence in hindi

**Unit III**

1. Paramanu oorja evam and kadhya sanrakshan (lesson ) annotations and answers,
2. Technical terms and words, letter writing

**Unit IV**

1. Yuvavon se (lesson), annotations, essay and questions and answers
2. Types of official correspondence, technical terms
3. Grammer(Change of voice, correcting the sentences)

**Unit V**

1. Yogyata aur vyavasay ka chunav (Lesson) essay, questions and answers
2. Letter writing
3. grammer & technical terms

**Books:** Hindi gadhya maala by Dr. Syed Rahmatullah, Poornima Prakashan, Royapetah  
 Prayojanmulak Hindi by Dr. Syed Rahmatullah, Poornima Prakashan  
 Saral Hindi Vyakaran-2, Dakshin Bharat Hindi Prachara Sabha, T.Nagar

HBFR14001	FRENCH - I	3	0	0	3
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**SEMESTER I  
PAPER I**

Prescribed text : CAMPUS I

Units : 1-6 (Module A et B)

Unité - 1

Découvrir le langue française

Unité - 2

Faire connaissance

Unité - 3

Organizer son temps

Unité - 4

Découvrir son environnement

Unité - 5

S'informer, Se faire plaisir

Authors : Jacky Girardet, Jacques Pécheur

Available at : Goyal Publishers Pvt Ltd 86, University Block Jawahar Nagar

New Delhi - 110007. Tel : 011 - 23858362 / 23858983

2015-2016 Batch

**Syllabus For English**

**Semester I Paper I**

**Common to All UG Courses (H&S)**

(i.e. B.B.A., B.C.A.(General), B.C.A.(Animation & Multimedia), B.Com. (General), B.Com. (A&F), B.Com. (C.S), B.Sc. (Comp. Sci.), B.Sc. (I.Sc.& Cyber Forensics), B.Sc.Comp.,(Science & Networking), B.Sc. (Electronics), B.Sc. (Media & Vis. Com.), B.Sc. (Bio.Tech), B.Sc. (Maths), B.Sc. ( Physics), B.Sc. (Chemistry) etc)

**With Effect from (2015-2016)**

Code:

**L T P C**

**3 0 0 3**

**UNIT I**

Prose Treasure Hunt (Cambridge University Press)

**UNIT II**

Poem Treasure Hunt (Cambridge University Press)

**UNIT III**

Short Stories Treasure Hunt (Cambridge University Press)

**UNIT IV**

One Act Plays Treasure Hunt (Cambridge University Press)

**UNIT V**

Vocabulary Grammar and Usage

**Total:**

**45 Periods**

*Approved by the XXIV Academic Council  
in its meeting held on 15.9.2015*

*S. 9. 2015*  
**Prof. Dr. S. DINAKARAN,**  
JOINT REGISTRAR  
Dr. M.G.R.



**Syllabus for English**

**Semester I Paper I**

**UNIT I: Prose**

- Treasure Hunt (Cambridge University Press India Pvt. Limited)
- With the Photographer - Stephen Leacock
- I Won't Let Him Go! - Madhavan Kutty
- J.R.D.'s Words of Inspiration to Sudha Murthy - Sudha Murthy

**UNIT II: Poetry**

- Treasure Hunt (Cambridge University Press India Pvt. Limited)
- Osymandias - P.B.Shelly
- The Palanquin Bearers - Sarojini Naidu
- The Village School Master - Oliver Goldsmith

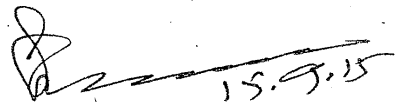
**UNIT III: Short Stories**

- The Lady or the Tiger Frank Stockton
- Gold Frame - R.K.Lakshman

**UNIT IV: One Act Play**

- Treasure Hunt (Cambridge University Press India Pvt. Limited)
- Refund - Fritz Karinthy

**UNIT V: Vocabulary Grammar and Usage**

  
15.9.15  
**Prof. Dr. S. DINAKARAN,**  
JOINT REGISTRAR  
Dr. M.G.R.  
Educational and Research Institute  
University  
Periyar E.V.R. High Road  
Chennai 600 096

Synonyms, Antonyms- Word Class: Noun, Adjective, Verb, Adverb- Articles, Conjunctions,  
Discourse Markers, Preposition, Voice: Active & Passive, Degrees of Comparison,  
Direct and Indirect Speeches: 'wh' questions, 'yes'/'no' questions, Tag questions

**Skill based activities**

**(Internal—not for the external setter)**

**LRW skill testing for the first internal (50%)**

**Listening:** vocabulary testing and note taking to be tested on Listening to famous Speeches/  
instruction,

**External**

**Writing:**

Comprehension, Formal Letter: Letter to the Bank Manager requesting sanction of a loan  
Letters of Application for jobs/ resume, Preparing for an interview  
Letter to the editor of a news paper on civic issues

**Text**

Board of Editors, Treasure Hunt, Cambridge University Press, New Delhi 2013


**References:**


Wren P.C. & Martin H, Grammar and Composition S. New Delhi, S Chand & Co, 2006

Biber Douglas et al, Student Grammar of Spoken & Written English, UU, Pearson Education  
Ltd, 2010

McCarthy, Michael et al, English Vocabulary in Use, New Delhi, Cambridge University  
Press, 2011

Dr. S. Padmasani Kannan, Dr. R. Pushkala, Functional English, Commonwealth Publications,  
Chennai, 2008

  
15.9.15  
**Prof. Dr. S. DINAKARAN,**  
JOINT REGISTRAR  
Dr M.G.R.  
Educational and Research Institute  
University



To Ao (HBS)  
Dr.M.G.R Educational and Research Institute, University, Chennai-95.

BMA13030	ALLIED MATHEMATICS I	L T P C 3 1 0 4
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UNIT I MATRICES (Common to V.O. HBS) (12 hrs)  
Elementary operations on Matrices – Rank of a Matrix – Solving simultaneous equations (atmost three equations with three unknowns).

UNIT II TRIGONOMETRY (12 hrs)  
Expansions of  $\sin n\theta$ ,  $\cos n\theta$  in powers of  $\sin\theta$  and  $\cos\theta$  – Expansion of  $\tan n\theta$  – Expansions of  $\sin^n\theta$  and  $\cos^n\theta$  in terms of Sines and Cosines of multiples of  $\theta$  – Hyperbolic functions – Separation into real and imaginary parts.

UNIT III INTEGRATION (12 hrs)  
Basic concepts of Integration – Methods of Integration – Integration by substitution – Integration by parts – Definite Integrals – Properties of Definite Integrals – Problems on finding Area using single integrals (simple problems).

UNIT IV INTRODUCTION TO PROBABILITY (12 hrs)  
Axioms of Probability – Conditional probability – Total probability – Baye's Theorem – Random variable – Probability mass function – Probability density function – Properties (Definition and simple problems).

UNIT V STANDARD DISTRIBUTIONS (12 hrs)  
Binomial – Poisson – Exponential – Normal distributions.

Total no. of hrs: 60

Reference Books:

- 1) Vittal.P.R, *Allied Mathematics*, Margham Publications., Chennai.
- 2) Venkatachalapathy.S.G, *Allied Mathematics*, Margham Publications., Chennai.
- 3) Singaravelu, *Allied Mathematics*, Meenakshi Agency., Chennai.
- 4) Gupta S.C., Kapoor V.K., *Fundamentals of Mathematical Statistics*, S.Chand & Co.
- 5) Vittal.P.R, Malini, *Statistical & Numerical Methods*, Margham Publications., Chennai.

T. J. Jeyaraj  
14-9-15  
Approved by the XXIV Academic Council  
in its meeting held on 15.9.15.

T. J. Jeyaraj  
15.9.15

T. J. Jeyaraj

**UNIT: I** **9 0 0**

**Introduction to Ms-Word:**

Starting Word, Typing and saving your Masterpiece, printing Title Bar, Toolbars, The Ruler, Insertion point, Scroll Bars, The Menu bar, The status bar. Dialog Boxes: Command buttons, check boxes, drop-down lists, tabs, radio buttons, Increment buttons, Wizards and Templates. Basic Text Editing: Moving around in a document, Adding Text, Cut, Copy, Paste, Undo, Redo and Delete.

**UNIT: II** **9 0 0**

**Formatting:** Character formatting, Font dialog box paragraph Formatting, Keeping text together, Adding borders and shading, Using tabs, page and section formatting, setting page margins, numbering pages. Searching and Proofreading Tools: Find and replace, Searching for special character, Proofreading tools, Choosing custom dictionary, Checking Grammar, Choosing a writing style, Using the Thesaurus

**UNIT: III** **9 0 0**

**Working with Tables and Columns:** Anatomy of a Table, creating a table, entering text in a table, Using table tools, Changing columns widths with Auto fit, Gridlines, Merging Cells, Formatting Sorting tables, copying tables, deleting tables, Printing of Documents, Mail merge.

**UNIT: IV** **9 0 0**

**Introduction to Ms-Excel:** Spreadsheet overview, Excel highlights, starting excel, creating spreadsheet excel menu , Working with Formulas and Functions, Introduction, Using basic formulas, advance formulas, designing formulas. Using basic and advance functions, Formatting: Types of formatting Using borders, color and patterns, Conditional format, Creating and Formatting Charts: Introduction to charts. Creating charts, formatting charts, exploring charts.

**UNIT: V** **9 0 0**

**Introduction to Power point** - Creating a Presentation with Microsoft PowerPoint, Modifying a Presentation, Inserting Objects into a Presentation, Finishing a Presentation, Working with Advanced Tools and Masters, Enhancing Charts, Inserting Illustrations, Objects and Media Clips, Using Advanced Features. **Introduction to Access:** Introduction to database, Database basics, Creating and working with the database, Finding, filtering and formatting data.

**Total Number of Hours: 45 Hrs**

**Reference Books:**

1. TEACH YOURSELF OFFICE 97/2000 FOR WINDOWS BY COREY SANDLER, TAM BADGETT, JAN WEINGARTEN (BPB)
2. MICROSOFT OFFICE 2000 BY COMPLETE (BPB)
3. MASTERING WORD 2000 BY MANSFIELD (BPB)
4. ESSENTIAL MS-WORD 2000 B MARMEL (BPB)
5. TEACH YOURSELF MS-EXCEL 2000 IN 24 HOURS (BPB)
6. TEACH YOURSELF MS-EXCEL 2000 PROGRAMMING IN 21 DAYS (BPB)

<b>HBCS14G01</b>	<b>FUNDAMENTALS OF PROGRAMMING</b>	<b>3</b>	<b>1</b>	<b>0</b>	<b>4</b>
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**UNIT-I** **9 3 0**

C fundamentals Character set - Identifier and keywords - data types - constants - Variables - Declarations - Expressions - Statements - Arithmetic, Unary, Relational and logical , Assignment and Conditional Operators - Library functions.

**UNIT-II** **9 3 0**

Data input output functions - Simple C programs - Flow of control - if, if-else, while, do-while, for loop, Nested control structures - Switch, break and continue, go to statements - Comma operator.

### **UNIT-III**

**930**

Functions -Definition - prototypes - Passing arguments - Recursion. Storage Classes - Automatic, External, Static, Register Variables .

### **UNIT-IV**

**930**

Arrays - Defining and Processing - Passing arrays to functions - Multi-dimension arrays - Arrays and String. Structures - User defined data types - Passing structures to functions - Self-referential structures - Unions - Bit wise operations.

### **UNIT-V**

**930**

Pointers - Declarations - Passing pointers to Functions - Operation on Pointers - Pointer and Arrays - Arrays of Pointers - Structures and Pointers - Files: Creating, Processing, Opening and Closing a data file.

**Total Number of Hours: 60 Hrs**

### **Text Book**

1. Ashok N.Kamthane ,Programming with ANSI and Turbo C , Pearson Education, 2006

### **Reference Books:**

1. B.W. Kernighan and D.M.Ritchie, The C Programming Language, 2nd Edition, PHI, 1988.
2. H. Schildt, C: The Complete Reference, 4th Edition, TMH Edition, 2000.
3. Kanetkar Y., Let us C, BPB Pub., New Delhi, 1999.

<b>HBCA14L01</b>	<b>PC SOFTWARE LAB</b>	<b>0</b>	<b>0</b>	<b>3</b>	<b>1</b>
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### **MSWORD**

1. Text Manipulations.
2. Usage of Numbering, Bullets, Footer and Headers.
3. Usage of Spell check, and Find & Replace.
4. Text Formatting.
5. Picture insertion and alignment.
6. Creation of documents, using templates.
7. Creation templates.

8. Mail Merge Concepts.
9. Copying Text & Pictures from Excel.

### **MS - EXCEL**

10. Cell Editing.
11. Usage of Formulae and Built-in Functions.
12. File Manipulations.
13. Data Sorting (both number and alphabets).
14. Worksheet Preparation.
15. Drawing Graphs.
16. Usage of Auto Formatting.

### **POWER POINT**

17. Inserting Clip arts and Pictures.
18. Frame movements of the above.
19. Insertion of new slides.
20. Preparation of Organization Charts.
21. Presentation using Wizards.
22. Usage of design templates.

### **ACCESS**

23. Create a data base
24. Execute queries
25. Insert, delete, modify

**I. Summation of Series**

1. Sin(x)
2. Cos(x)
3. Exp(x) (Comparison with built in functions)

**II String Manipulation**

1. Counting the no. of vowels, consonants, words, white spaces in a line of text and array of lines
2. Reverse a string & check for palindrome.

**III Recursion**

1. nPr, nCr
2. GCD of two numbers

**IV Sorting and Searching**

1. Bubble Sort
2. Linear Search

**V Structures and Pointers**

1. Preparation of Mark Sheet
2. Demonstration of pointer Arithmetic

**VI File Operations**

1. File Copying
2. Usage of command line arguments

BEN13L01 CAREER & CONFIDENCE BUILDING (SOFT SKILLS - 1) 0 2 0 2

**OBJECTIVES**

- 1) To bring behavioural patterns of students.
- 2) To train them for corporate culture.
- 3) To create self awareness.
- 4) To build confidence.
- 5) To train the students for facing the interviews and develop interpersonal relationship.

**UNIT 1**

Creation of awareness of top companies / improving skill set matrix / Development of positive frame of mind / Creation of self awareness.

**UNIT 2**

Group discussions / Do's and don'ts – handling group discussions / What evaluators look for interpersonal relationships / Preparation of Curriculum Vitae / Resume.

**UNIT 3**

Interview – awareness of facing questions – Do's and don'ts of personal interview / group interview, enabling students to prepare for different procedures such as HR interviews and Technical Interviews / self introductions.

**UNIT 4**

Verbal aptitude, Reading comprehension / narration / presentation / Mock Interviews.

**UNIT 5**

Practical session on Group Discussion and written tests on vocabulary and reading comprehension.



<b>Tamil II</b>		<b>L</b>	<b>T</b>	<b>P</b>	<b>C</b>
		3	0	0	3

**இரண்டாம்பருவம் - தமிழ்த்தாள் II**

**அலகு - 1**

1. சிற்றிலக்கிய வரலாறு
2. கிறித்துவ இலக்கிய வரலாறு
3. இஸ்லாமிய இலக்கிய வரலாறு

**அலகு - 2**

1. நந்திக் கலம்பகம்
2. முத் தொள்ளாயிரம்
3. தமிழ்விடு தூது (36 கண்ணிகள்)

**அலகு - 3**

1. திருக்குற்றாலக் குறவஞ்சி (குறத்தி மலைவளம் கூறுதல்)
2. முக்கூடற்பள்ளு (நாட்டுவளம்)
3. இயேசுபிரான் பிள்ளைத்தமிழ் (செங்கீரைப் பருவம் முதல் 5 செய்யுள்கள்)

**அலகு - 4**

1. நளவெண்பா (கனிநங்கு காண்டம்)
2. சீறாப்புராணம் (மானுக்குப் பிணைநின்ற படலம்)

**அலகு - 5**

1. இலக்கணக் குறிப்பு: பண்புத்தொகை, வினைத்தொகை, உம்மைத்தொகை, உவமைத்தொகை, வேற்றுமைத்தொகை, அன்மொழித்தொகை, இரு பெயரொடுப் பண்புத்தொகை, உருவகம்.
2. ஒரு பொருள் குறித்த பல சொல், பல பொருள் குறித்த ஒரு சொல்
3. ஒருமை, பன்மை மயக்கம், பிறமொழிச் சொற்களை நீக்குதல், அகர வரிசைப் படுத்துதல்

**மேற்பார்வை நூல்கள்:**

1. சென்னைப் பல்கலைக் கழக வெளியீடு - 2013
2. பொது இலக்கணம்

Hindi syllabus, semester ii part I (hindi)

Paper - II

(Poetry, Hindi computing, alankar)

Unit I

1. Poetry Manu Ki chintna - kavi parichay, annotation, summary, Madhushala and kabirdhas, two padhya only
2. Alankar anupras, and upma only

Unit II

1. Poetry Surdas (two padh only), kavi parichay, annotation, Kaikeyi ka paschatap
2. Utpreksha alankar

Unit III

1. Meerabai only one padhya
2. Kaamkaji hindi, concept of official language, and hindi computing theory

Unit IV

1. Jugnu, summary & meaning annotation
2. Hindi software packages,

Unit V

1. Kavi parichay
2. Kabirdas, Meerabai Mythili saran gupta
3. Jotshankar Prasad
4. Slesha alankar.

Books : 1. Kavya Kusum-3, dakshin Bharat hindi prachara sabha

2. Ras Chand Alankar by Murali Manohar, vidhya nilaya

3. Kaam kaji hindi and hindi computing by hareesh vishwavidyalay prakashan, agra.

## **SEMESTER II**

### **PAPER II**

Prescribed text : **CAMPUS I**

Units : 1(Module C et D)

Unité - 2

**Cultiver ses relations**

Unité - 3

**Découvrir le passé**

Unité - 4

**Entreprendre**

Unité - 5

**Prendre des décisions**

Unité - 11

**Faire face aux problèmes**

Unité - 12

**S' évader**

**Authors : Jacky Girardet, Jacques Pécheur**

**Available at : Goyal Publishers Pvt Ltd 86, University Block Jawahar Nagar**

**New Delhi - 110007. Tel : 011 - 23858362 / 23858983**

Syllabus For Part II English

Semester II Paper II

Common to All UG Courses (H&S)

(i.e. B.B.A., B.C.A.(General), B.C.A.(Animation & Multimedia), B.Com. (General), B.Com. (A&F), B.Com. (C.S), B.Sc. (Comp. Sci.), B.Sc. (I.Sc.& Cyber Forensics), B.Sc.Comp.,(Science & Networking), B.Sc. (Electronics), B.Sc. (Media & Vis. Com.), B.Sc. (Bio.Tech), B.Sc. (Maths), B.Sc. ( Physics), B.Sc. (Chemistry) etc)

With Effect from (2015-2016)

L T P C

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UNIT I

Prose - Treasure Hunt II

UNIT II

Poem - Treasure Hunt II

UNIT III

Short Stories - Treasure Hunt II

UNIT IV

One Act Plays - Treasure Hunt II

UNIT V

Grammar and Listening

Total:

45 Periods

Approved by the XXIV Academic Council  
its meeting held on 15.9.15  
15.9.15

Prof. Dr. S. DINAKARAN,  
JOINT REGISTRAR  
Dr. M.G.R.  
Educational and Research Institute  
University  
Periyar E.V.R. High Road  
Madurevoyal, Chennai-600 095.

**Syllabus for Part II English**

**Semester II Paper II**

**UNIT I: Prose**

Treasure Hunt II (Cambridge University Press India Pvt. Limited)

Mobile and Mixed Up - Anil Dharker

My Vision for India - A.P.J. Abdul Kalam

Common Sense - Theodore Sedgwick Fay, etl.

**UNIT II: Poetry**

Treasure Hunt II (Cambridge University Press India Pvt. Limited)

On Killing a Tree - Gieve Patel

Essay on Man - Alexander Pope

I Know why the Caged Bird Sings - Maya Angelou

**UNIT III: Short Stories**

Treasure Hunt II (Cambridge University Press India Pvt. Limited)

A Room 10 X 8 - K.S.Duggal

The Face on the Wall - E.V. Lucas

**UNIT IV: One Act Play**

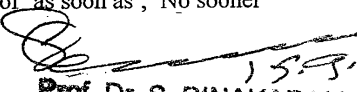
Treasure Hunt II (Cambridge University Press India Pvt. Limited)

The Never Never Nest - Cedric Mount

**UNIT V: Vocabulary Grammar and Usage**

Synonym and Antonym, Phrasal Verb- Idioms and Phrases, Collocation.

Gerund and infinitives, Auxiliaries: Primary and Modals, Use of 'as soon as', 'No sooner than', 'Hardly', 'Scarcely', 'too....to', 'so...that'

  
**Prof. Dr. S. DINAKARAN,**  
JOINT REGISTRAR  
Dr M.G.R.

Types of sentences: Simple, Compound, Complex., Interrogative, Exclamatory, Statement.

Subject: Verb Agreement

Skill based activities

(Internal—not for the external setter)

LRW skill testing for the second internal (50%)

**Listening:** vocabulary testing and note taking to be tested on Listening to famous Speeches/ instruction,

**External**

**Writing:**

Comprehension, Business letters—asking for quotation, placing order, complaint and compliance letter, preparing an agenda-mail for covering letter for application, note-making for an unknown passage, Expanding Hints into meaningful paragraph, Short Essay

**Text**

Board of Editors, Treasure Hunt-II, Cambridge University Press, New Delhi 2013

**References:**

Wren P.C. & Martin H, Grammar and Composition S. New Delhi, S Chand & Co, 2006

Biber Douglas et al, Student Grammar of Spoken & Written English, UU, Pearson Education Ltd, 2010

Dr. S. Padmasani Kannan, Dr. R. Pushkala, Functional English, Commonwealth Publications, Chennai, 2008



**Prof. Dr. S. DINAKARAN,**  
JOINT REGISTRAR  
Dr M.G.R.  
Educational and Research Institute  
University  
Periyar E.V.R. High Road  
Maduravoyal, Chennai-600



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RA 202

Dr. M.G.R Educational and Research Institute, University, Chennai-95.

BMA13031	ALLIED MATHEMATICS II	L T P C 3 1 0 4
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(Common to all O.G. HBS)

**UNIT I ORDINARY DIFFERENTIAL EQUATIONS (12 hrs)**

First order differential equations – Second and higher order linear differential equations with constant coefficients and with RHS of the form:  $e^{ax}$ ,  $x^n$ ,  $\sin ax$ ,  $\cos ax$ ,  $e^{ax} f(x)$ ,  $x f(x)$  where  $f(x)$  is  $\sin bx$  or  $\cos bx$  (simple problems).

**UNIT II PARTIAL DIFFERENTIATION (12 hrs)**

Partial derivatives – Jacobians – Maxima and Minima of functions of two variables – Lagrange's multipliers.

**UNIT III MULTIPLE INTEGRALS (12 hrs)**

Double integral in Cartesian and Polar Co-ordinates – Change of order of integration – Triple integral in Cartesian Co-ordinates (simple problems).

**UNIT IV LINEAR PROGRAMMING (12 hrs)**

Formulation of LPP – Standard form of LPP – Graphical method – Simplex method – Big M method.

**UNIT V TRANSPORTATION AND ASSIGNMENT (12 hrs)**

Formulation of Transportation problem – North West corner method – Least cost method – Vogel's approximation method – Optimality test – MODI method – Degeneracy – Assignment problem: Hungarian method.

Total no. of hrs: 60

Reference Books:

- 1) Vittal.P.R., *Allied Mathematics*, Margham Publications., Chennai.
- 2) Venkatchalapathy.S.G, *Allied Mathematics*, Margham Publications., Chennai.
- 3) Singaravelu, *Allied Mathematics*, Meenakshi Agency., Chennai.
- 4) Hamdy A. Taha, *Operations Research: An Introduction (9<sup>th</sup> ed.)*, Pearson, (2010).
- 5) Hira D.S., Gupta P.K., *Operations Research*, S.Chand & Co., (2007).

Approved by the  
XXIV Academic Council  
15.9.15.  
15.9.15  
T. John  
#4-9-15  
Island Regalia

HBCS14G02	OBJECT ORIENTED PROGRAMMING	3	1	0	4
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**UNIT-I****9 3 0**

**Principles of Object Oriented Programming (OOP) :** Evolution of C++ -Programming Paradigms - Key Concepts of OOP - Advantages of OOP - Usage of OOP and C++ .Input and Output in C++-Streams-Stream classes Unformatted console I/O operations-Member functions of istream class-manipulators-manipulators with parameters

**UNIT-II****9 3 0**

Introduction to C++; Tokens, Keywords, Identifiers, Variables, Operators, Expressions and Control Structures: If, If...Else, Switch - Repetitive Statements- for, while, do...while - Pointers and arrays

**UNIT-III****9 3 0**

Functions in C++ - Main Function - Function Prototyping - Parameters Passing in Functions - Values Return by Functions - inline Functions - Function Overloading Classes and Objects; Constructors and Destructors; and Operator Overloading - Type of Constructors

**UNIT - IV****9 3 0**

**Inheritance:** Single Inheritance - Multilevel inheritance - Multiple inheritance - Hierarchical Inheritance - Hybrid Inheritance. Pointers - Virtual Functions and Polymorphism

**UNIT-V****9 3 0**

**Working with Files:** Classes for File Stream Operations - Opening and Closing a File - End-of-File Detection - File Pointers - Updating a File - Error Handling during File Operations - Command-line Arguments

**Total number of hours: 60 Hrs**

**Text Books**

1. Ashok N.Kamthane, Object Oriented Programming with ANSI & Turbo C ++, Pearson Education, 2006

**Reference Book:**

1. E. Balagurusamy, Object Oriented Programming with C++, Mc Graw Hill, 4<sup>th</sup> edition.



<b>HBCS14G03</b>	<b>DATA STRUCTURE</b>	<b>3</b>	<b>1</b>	<b>0</b>	<b>4</b>
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**UNIT-I**

**9 3 0**

Definition of a Data structure - primitive and composite Data Types, Arrays, Operations on Arrays, Ordered lists.

**UNIT-II**

**9 3 0**

Stacks - Operations - Applications of Stack - Infix to Postfix Conversion, Recursion, Queue-operations.

**UNIT-III**

**9 3 0**

Singly Linked List - Operations, Application - Representation of a Polynomial, Polynomial Addition; Doubly Linked List - Operations.

**UNIT-IV**

**9 3 0**

Trees and Graphs: Binary Trees - Operations - Recursive Tree Traversals- Graph - Definition, Types of Graphs, Graph Traversal - DFS and BFS

**UNIT-V**

**9 3 0**

Searching- linear and binary search - Sorting Insertion, Bubble, Quick and Merge sort.

**Total number of hours: 60 Hrs**

**Text Books**

1. C++ plus Data structure by N.Dale, publishers narosa publishing, Edition 2000.

**Reference Books:**

1. Data Structures, A. Chitra, P.T. Rajan, Tata McGraw Hill Education 2007.

<b>HBCS14L02</b>	<b>OBJECT ORIENTED PROGRAMMING LAB</b>	<b>0</b>	<b>0</b>	<b>3</b>	<b>1</b>
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1. Write the following simple C++ program.
  - I) To display "HELLO" welcome to C++ program
  - II) Implement if-else concept
  - III) Implement while, Do-while and for loops
  - IV) Implement switch-case
  
2. Write a C++ program to add two integer numbers.
  - I) Simple C++ program
  - II) Using class and object
  - III) Define the function outside the class using scope resolution operator
  - IV) Using class and object parameter passing
  - V) Implement constructor
  - VI) Implement parameterized constructor
  
3. Write a C++ program to implement function overloading.
4. Write a C++ program to implement operator overloading.
5. Write a C++ program to implement single inheritance.
6. Write a C++ program to implement file concepts.
7. Write a C++ program for Exception Handling.
8. Write a C++ program for Templates.

<b>HBCS14L03</b>	<b>DATA STRUCTURE LAB</b>	<b>0</b>	<b>0</b>	<b>3</b>	<b>1</b>
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1. Implement PUSH, POP operations of stack using Arrays.
2. Implement enqueue and dequeue operations of a queue using Arrays.
3. Implement PUSH, POP operations of stack using Pointers.
4. Implement enqueue and dequeue operations of a queue using Pointers.
5. Implement Creation, insertion, and deletion operations in Singly linked list.
6. Implementation of breadth first search for given graph.
7. Implementation of depth first search for a given graph.
8. Sorting - Quick sort.
9. Implementation of Merge Sort using template.
10. Implementation of heap sort method in c++.

<b>HBMG14L02</b>	<b>SOFT SKILLS II</b>	<b>0</b>	<b>0</b>	<b>6</b>	<b>2</b>
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To be organized by the Placement & Training department with the assistance of external agencies.

## PURPOSE

The purpose of this is to build confidence and inculcate various Soft skills and to help students to identify and achieve their personal potential

At the end of this training program the participant will be able to,

Explain the concept problem solving

- ❖ Outline the basic steps in problem solving.
- ❖ List out the key elements
- ❖ Explain the use of tools and techniques in problem solving.
- ❖ Discuss the personality types and problem solving techniques.
- ❖ By adapting different thinking styles in group and lean environment.
- ❖ Recognizing and removing barriers to thinking in challenging situations.
- ❖ Make better decision through critical thinking and creative problem solving.

**TOTAL: 30**

## METHODOLOGY

The entire program is designed in such a way that every student will participate in the class room activities. The activities are planned to bring out the skills and talent of the students which they will be employing during various in their real life.

1. Group activities + individual activities
2. Collaborative learning
3. Interactive sessions
4. Ensure Participation
5. Empirical Learning

### UNIT-1

**9 Hrs**

Self Introduction – Narration-Current News Update — Current Tech Update- GD-I

### UNIT – 2

**9 Hrs**

– Verbal Aptitude Test I — Odd man out series — GD-II- Mock Interview I

### UNIT – 3

**9 Hrs**

Verbal Aptitude Test II – Resume Writing – Mock Interview II - reading comprehension

### UNIT – 4

**9 Hrs**

GD – III – Numbers-Height and distance –directions –permutation and combination –odd man out –problem on ages

### UNIT – 5

**9 Hrs**

Mock Interview III — Ratio and proportion –clocks –HCF and LCM –time and work – profit and loss -partnership

**Total Number of Hours: 45 Hrs**

## REFERENCES

1. Pushpalata and Sanjay Kumar, “Communicate or Collapse: A Handbook of Effective Public Speaking”, Group Discussions and Interviews. Prentice-Hall,Delhi,2007
2. Thorpe, Edgar, “Course in Mental Ability and Quantitative Aptitude”, Tata McGraw-Hill,2003
3. Thorpe, Edgar, “Test of Reasoning”, Tata McGraw-Hill, 2003

4. Prasad, H.M, “How to prepare for Group Discussion and Interview”, Tata McGraw-Hill,2001
5. “Career Press Editors. 101 Great Resumes”, Jaico Publishing House, 2003
6. Aggarwal, R.S, “A Modern Approach to Verbal Non-Verbal Reasoning”, S.Chand & Co.,2004
7. Mishra, Sunita and Muralikrishna, “Communication Skills for Engineers”, Pearson Education, First Edition, 2004

HBPH14A01	ALLIED - II : APPLIED PHYSICS - I	3	1	0	4
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**Unit -1: Heat and Sound**

**9 3 0**

Conduction of Heat- Thermal Conductivity- Thermal Conductivity of bad Conductor- Lee’s Disc Method- Radial Flow of Heat- Thermal Conductivity of glass and rubber.

Ultrasonic’s- Production of Ultrasonic’s- Piezo electric method- Magnetostriction Method - Properties- Applications.

**Unit- 2: Fiber Optics and Laser**

**9 3 0**

**Fiber Optics-** Introduction- Total internal reflection- Acceptance Angle and Numerical Aperture- classification of Optical Fibers- Step index Fiber and Graded index Fiber- Optical Fiber communication.

**Laser:** Spontaneous and Stimulated emission- Population Inversion - He-Ne Laser, CO<sub>2</sub> Laser - Semiconductor Laser - Applications.

**Unit-3: Electrostatics, Electricity & Magnetism** **9 3 0**

Capacitor – energy of a charged capacitor – Capacity of a cylindrical capacitor - loss of energy due to sharing of charges – magnetic field due to a current carrying conductor .

DC & AC motors - Transformer – construction and principle of operation - Eddy current.

**Unit- 4: D.C and A.C Circuits** **9 3 0**

**DC Circuits:** Introduction to electrical circuits, ohm’s law, Kirchhoff’s law, method of solving circuits by Kirchhoff’s laws, series and parallel connections - problems.

**AC Circuits:** peak, average and RMS values of ac current and voltage –LR circuits, CR circuits, LCR circuits, Resonance frequency- Power factor and current values in an ac circuit.

**Unit- 5: Nanomaterials and NDT** **9 3 0**

**Nanomaterials:** Definition- classification- properties- Types of synthesis method - Sol-gel method - Gas condensation Method - Chemical method- their Applications.

**Non-Destructive Method:** Definition- Liquid Penetrant Method- Ultrasonic Flaw detection Method- Applications.

**Books for study**

1. Allied Physics- Dr.K. Thangaraj and Dr. D. Jeyaraman- Popular Book Depot.
2. Applied Physics for Engineers- Dr. V. Rajendran & Dr. A. Marikani - TATA McGraw HILL
3. Electricity and Magnetism by N.S. Khare and S.S. Srivastava, Atma Ram & Sons, 10th Edition, New Delhi (1983).

**Books for References:**

1. Fundamentals of Physics by Resnick & Halliday
2. Engineering Physics-1 by Dr. D. Jeyaraman
3. Materials Science by Dr. M. Arumugam - Anuratha Publications.

<b>HBCS14G04</b>	<b>PROGRAMMING IN JAVA</b>	<b>3</b>	<b>1</b>	<b>0</b>	<b>4</b>
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**UNIT- I** **9 3 0**

Introduction to Java - Features of Java - Object Oriented Concepts - Data Types - Variables - Arrays - Operators - Control Statements-Input and output-Scanner and System class-print(),println(), and printf() methods.

**UNIT- II** **9 3 0**

Classes - Objects - Constructors - Overloading method - Access Control - Static and fixed methods - Inner Classes - String Class - Inheritance - Overriding methods - Using super- Abstract class – Type Wrapper classes for primitive types- Auto boxing and Auto Unboxing – Recursion.

**UNIT- III****9 3 0**

GUI components – Common GUI Event types and Listener Interfaces- JoptionPane – JLabel, Jtextfield, JButton, JCheckBox, JTextarea, JComboBox, JList, JPanel – Mouse Event Handling - Adapter Classes- Key Event Handling.

**UNIT- IV****9 3 0**

Layout Managers – Flow Layout, Border Layout, Grid Layout - Graphics and Java 2D – Graphics contexts and Graphics objects – Color control – Font Control – Drawing Lines, Rectangles and Ovals – JSlider – Using menus with Frames.

**UNIT- V****9 3 0**

Packages - Access Protection - Importing Packages - Interfaces - Exception Handling - Throw and Throws - Thread - Synchronization - Runnable Interface - Inter thread Communication – Multithreading - I/O Streams - File Streams - Applets – Introduction to Java API Packages(java.lang and java.util )

**Total number of hours: 60 Hrs****Text Books**

1. Programming in Java – 2nd Edition by C.Muthu, TMH Publication
2. Java How to Program by Deitel & Deitel - 6th Edition- PHI Publication 2005.

<b>HBCS14G05</b>	<b>OPERATING SYSTEM</b>	<b>3</b>	<b>1</b>	<b>0</b>	<b>4</b>
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**UNIT-I****9 3 0**

Introduction - types of operating systems - operating system services - system calls and system programs

**UNIT-II****9 3 0**

Process management - Process concepts - process scheduling - operation on process Inter process communication - CPU scheduling - scheduling algorithms - Deadlocks

**UNIT-III****9 3 0**

Memory Management - Single and multiple partitioned allocation – paging -segmentation - Virtual Memory Management - Demand paging and Page Replacement Algorithms

**UNIT-IV****9 3 0**

Information management - File concept - Access methods - Directory structure - allocation methods - free space management - disk scheduling.

**UNIT-V**

**930**

UNIX: Unix system - A Case Study.

**Text Book**

Abraham Silberschatz and P. B. Galvin - Operating system concepts - Addison Wesley Publication



<b>HBCS14G06</b>	<b>COMPUTER ARCHITECTURE AND ORGANIZATION</b>	<b>3</b>	<b>0</b>	<b>0</b>	<b>3</b>
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**Unit 1:**

**9 0 0**

**Computer Evolution:** Pentium and Power PC Evolution. Computer System: Components – Function Interconnection Structures – Bus Interconnection – Basics of PCI Bus. Memory: Characteristics Hierarchy – Cache Memory – Principles – Cache Design – Locality of Reference.

**Unit-2:**

**9 0 0**

**Main Memory:** Static RAM – Dynamic RAM – Types of ROM – Memory Chip Organization – Types of DRAM. External Memory: Magnetic Disk – Basics of RAID – Optical Memory – Magnetic Tapes

**Unit 3:**

**9 0 0**

**Input/output:** External Devices – I/O Module – Programmed I/O – Interrupt Driven I/O – DMA – I/O Channels & Processors. Computer Arithmetic: ALU – Integer Representation and Arithmetic – Floating Point Representation and Arithmetic. Instruction Set: Characteristics – Operand Types – Operation Types – Addressing Modes – Instruction Formats – Pentium and Power PC Operands, Operations, Addressing Modes (Simple Examples).

**Unit-4:**

**9 0 0**

**CPU:** Organization of Processors and Registers – Instruction Cycle – Instruction Pipelining – Pentium Processor. RISC: Characteristics – Large Register File – Register Optimization – Architecture – RISC Vs CISC Characteristics – Pipelining.

**Unit-5:**

**9 0 0**

**Control Unit:** Micro-Operations – Control of Processors – Hardwired Implementation - Micro Programmed Control Concepts – Microinstruction Sequencing – General Microinstruction Execution.

**Total number of hours: 45 Hrs**

**Recommended Texts**

1. W. Stallings, 2003, Computer Organization and Architecture, 6<sup>th</sup> Edition- PHI, New Delhi.

**1. Reference Books**

C. Hamacher, Z. Vranesic, S.Zaky, 2002, Computer Organization, 5th Edition, McGraw Hill.

<b>HBCS14G07</b>	<b>COMPUTER NETWORKS</b>	<b>3</b>	<b>0</b>	<b>0</b>	<b>3</b>
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**UNIT I**

**9 0 0**

Introduction to Networking, Uses of Computer Networks, Network Hardware, ISO OSI Reference Model, Transmission Media -Magnetic Media, Twisted Pair, Coaxial Cable, Fiber Optics, Wireless

Transmission - Radio Transmission, Microwave Transmission, Satellites. PSTN - Structure of Telephone System, Trunks and Multiplexing, Switching, Mobile Telephone System-GSM, CDMA

**UNIT II**

**9 0 0**

Data link layer Design Issues- Framing Error Detection and Correction, Data link Protocols- Unrestricted Simplex Protocol, Simplex Stop-and- Wait Protocol. One Bit Sliding Window Protocol Medium access control Sub layer, Bluetooth

**UNIT III**

**9 0 0**

The Network layer Virtual Vs Datagram Routing Algorithms-Shortest path Flooding Distance Vector etc, Congestion Control Algorithms Internetworking

**UNIT IV**

**9 0 0**

Transport Layer Connection Establishment Connection Release Flow control and Buffering, Multiplexing Crash Recovery Remote Procedure Call, Internet Transport Protocols: TCP, TCP Service Model TCP Protocol

**UNIT V**

**9 0 0**

Application Layer-The domain Name System, DNS namespace ,Name Servers, Email Architecture and services The User agent Sending and Reading Email WWW-Architectural overview Client side Server side URL Cookies Multimedia Introduction to Digital audio - Audio Compression Video Compression Cryptography (Basic concepts)

**Total number of hours: 45 Hrs**

**Core Reference:**

1. Computer Networks – Andrew .S. Tanenbaum Pearson Edu Asia Fourth edition

**Reference:**

1. Brijendra Singh, Data Communications and Computer Networks, PHI, 2nd Ed, 2007

<b>HBCS14L04</b>	<b>PROGRAMMING IN JAVA LAB</b>	<b>0</b>	<b>0</b>	<b>3</b>	<b>1</b>
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1. Finding area and Perimeter of a circle. Use Scanner class.
2. Determining the order of numbers generated randomly using Random Class.

3. String Manipulation (Substring removal, string replacement etc.)
4. Drawing Rectangles, Ovals etc using Applet.
5. Implementing Thread based applications & Exception Handling.
6. Application using synchronization such as Thread based, Class based and synchronized statements.
7. Implementing GUI based applications using swing components (JLabel, JButton, and JTextfield)
8. Implementing GUI based application using Layout managers and menus.
9. Application using file streams (sequential file)
10. Application using file streams (Random file)

1. Creation of a child, orphan and Zombie process.
2. IPC using pipes.
3. IPC using message queues.
4. Simulation of FCFS process scheduling.
5. Simulation of ROUND ROBIN process scheduling.
6. Simulation of SJF process scheduling.
7. Demonstration of process synchronization using signals.
8. Demonstration of process synchronization using semaphores.
9. Deadlock avoidance using banker's algorithm

**Unit - 1: Crystal Physics****9 3 0**

Space lattice- Unit cells- Bravais Space lattices- Lattice planes- Miller indices- calculation of number of atoms per unit cell- Atomic radius- Coordination number and Packing factor for SC, BCC, FCC, HCP structures.

**Unit - 2: Semiconductor Diodes and Transistors****9 3 0**

Semiconductors- P-type and N-type semiconductors- Junction diode and Zener Diode- Junction Diode & Zener Diode Characteristics- Junction Diode as a rectifier- Zener diode as a voltage regulator- Transistor- characteristics- Transistor as an amplifier.

**Unit - 3: Electronic Devices****9 3 0**

Rectifiers: Half Wave and Full Wave rectifier- Efficiency- Capacitive Filter- Ripple Factor

Field Effect Transistor: Types- Junction Field Effect Transistor, Metal Oxide Semiconductor Field Effect Transistor- Characteristics- Silicon Control Rectifier- Characteristics.

**Unit - 4: Digital Electronics****9 3 0**

Number system: Binary System, Decimal to Binary, Octal system, Hexadecimal system, Binary- Addition, Subtraction, Multiplication and Division.

Logic Gates: OR, AND, NOT, Exclusive-OR, NOR, NAND gates, simple combinational logic circuits- half adder, full adder, BCD adder.

**Unit - 5: Operational Amplifier**

Operational amplifier- OP-Amp -voltage amplifier, OP-Amp- Adder, Subtractor, Op-Amp comparator, OP-Amp Integrators.

**Total number of hours: 60 Hrs****Books for Study and Reference:**

1. V.K. Mehta- Principles of Electronics, S.Chand & Co.
2. R.S. Sedha- A Text book of Applied Electronics, S.Chand & Co.
3. B.L. Theraja- fundamentals of Electrical Engineering & Electronics, S.Chand & Co.
4. Applied Physics for Engineers- Dr. V. Rajendran & Dr. A. Marikani- TATA McGraw HILL

<b>HBCS14G08</b>	<b>DATABASE MANAGEMENT SYSTEMS</b>	<b>3</b>	<b>1</b>	<b>0</b>	<b>4</b>
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**UNIT-I****9 3 0**

Purpose of Database - Overall System Structure - Entity Relationship Model - Mapping Constraints - Keys - E-R Diagrams.

**UNIT-II****9 3 0**

Relational Model - Structure - Formal Query Language - Relational Algebra - Tuple and Domain Relational Calculus.

**UNIT-III**

**930**

Structured Query Language - Basic Structure - Set Operations - Aggregate Functions - Date, Numeric, and Character Functions - Nested Sub queries -Modification Of Databases - Joined Relations-DDL - Embedded SQL.

**UNIT-IV**

**930**

Relational Database Design - Pitfalls - Normalization Using Functional Dependencies - First Normal Form-Second Normal Form-Third Normal Form-Fourth Normal Form And BCNF.

**UNIT-V**

**930**

Oracle - Introduction – SQL (DDL,DML, DCL Commands) – Integrity Constraints – PL/SQL – PL/SQL Block – procedure, function – Cursor management – Triggers – Exception Handling.

**Total number of hours: 60 Hrs**

**Text**

1. Abraham Silberschatz, H.F.Korth and S.Sudarshan-Database System Concepts McGraw Hill Publication.
2. Singh-Database systems: Concepts, Design & applications, Pearson Education.

**References**

1. Gerald V.Post - DBMS-Designing and Business Applications - McGraw Hill Publications
2. Michael Abbey and Michael.J.Corey-Oracle- A Beginners guide TMH

<b>HBCA14G15</b>	<b>COMPUTER GRAPHICS</b>	<b>3</b>	<b>0</b>	<b>0</b>	<b>3</b>
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**UNIT-I**

**9 0 0**

Introduction to computer Graphics - Video display devices- Raster scan Systems - Random Scan Systems - Interactive input devices - Hard copy devices - Graphics software - Output primitives - line drawing algorithms - initializing lines - line function - circle Generating algorithms.

**UNIT-II**

**9 0 0**

Attributes of output Primitives - line attributes - Color and Grayscale style - Area filling algorithms - Character attributes inquiry functions - Two dimensional transformation - Basic transformation - Composite transformation - Matrix representation - other transformations.

**UNIT-III**

**9 0 0**

Two - dimensional viewing - window- to view port co-ordinate transformation - clipping algorithms - Interactive input methods - Physical input devices - logical classification of input devices - interactive picture construction methods.

**UNIT- IV**

**9 0 0**

Three - dimensional concepts - Three dimensional display methods - parallel Projection - Perspective Projection - Depth Cueing - Visible line and surface identification - Three dimensional transformation.

**UNIT-V**

**9 0 0**

Three dimensional viewing - Projection - Viewing transformation - implementation of viewing operations - Hidden surface and Hidden line removal - backface removals.

**Total number of hours: 45 Hrs**

**Text Books**

1. D.Hearn and M.P.Baker - Computer Graphics (C version) - Pearson Education.
2. W.M. Newman and RF.Sproull - Principles of Interactive Computer Graphics - McGraw Hill International Edition - 1979.

<b>HBCS14G09</b>	<b>VISUAL BASIC</b>	<b>3</b>	<b>0</b>	<b>0</b>	<b>3</b>
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**UNIT I**

**9 0 0**

**Forms and Control:** Customizing a Form - Writing Simple Programs-Toolbox-Creating Controls - Name Property-Command Button - Access Keys - Image Controls - Text Boxes -Labels Message - Boxes-Grid-Editing Tools-Variables-Data Types-String –Numbers.

**UNIT II** **9 0 0**

**Functions and Events:** Displaying Information-Determinate Loops-Indeterminate Loops-Conditionals-Built-In Functions-Functions and Procedures.

**UNIT III** **9 0 0**

**Controls:** Lists-Arrays-Sorting and Searching- Records-Control Arrays-Combo Boxes-Grid Control-Projects with Multiple forms- Do Events and Sub Main-Error Trapping- Active X Control.

**UNIT IV** **9 0 0**

**Menus:** VB Objects-Dialogue Boxes-Common Controls-Menus-MDI Forms-Testing, Debugging and optimization-working with graphics-

**UNIT V** **9 0 0**

**Mouse Activity:** Monitoring Mouse Activity-File Handling-File System Controls-File System Objects-COM/OLE-Automation- DLL Services-OLE Drag and Drop.

**Total Number of hours: 45 Hrs**

**Text Books:**

1. Gary Cornell-Visual Basic 6 from the Ground Up-Tata McGraw Hill, New Delhi, 2008

**Reference Books:**

1. Deitel & Deitel, T.R.Nieto, “Visual Basic 6, How to program”, Prentice Hall- 2006.
2. Steven Holzner, Visual Basic 6, Programming Black Book by Dream tech Press, 2009
3. Noel Jerke - Visual Basic 6(The Complete Reference)-Tata McGraw Hill-2005.

<b>HBCS14L07</b>	<b>VISUAL BASIC &amp; DBMS LAB</b>	<b>0</b>	<b>0</b>	<b>3</b>	<b>1</b>
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**OBJECTIVE:**

To implement the following list of Programs.



## **I. Program to learn DDL and DML commands**

1. Creating a database, simple queries
2. Use of select statements for queries
  - A. AND, OR, NOT operations
  - B. Union intersection and join operations
3. Sorting and grouping
4. Nested queries using SQL
6. Update operations using SQL.

## **II. Program to learn PL/SQL**

- a. To create a cursor and work on that.
- b. To create PL/SQL code for Exception.
- c. To create PL/SQL code using control statement.
- d. To create PL/SQL code using sub programs.

## **III. Visual Basic**

Any RDBMS package creates database and performing the operations given below using a Menu Driven program: Insertion, (b) Deletion, (c) Modification, (d) Generating a reports (Simple) for the Following Systems:

Program to develop an application for

- a. Pay-roll processing
- b. Student evaluation system.
- c. Computerized quiz
- d. Electricity bill preparation system

<b>HBCS14L08</b>	<b>COMPUTER GRAPHICS LAB</b>	<b>0</b>	<b>0</b>	<b>3</b>	<b>1</b>
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1. Write a C program to draw line using Bresenham's algorithm.
2. Write a C program to draw Circle using Bresenham's algorithm.
3. Write a C program to draw Ellipse using Bresenham's algorithm.
4. Write a program to apply scaling and rotation to 2-Dimensional shapes.

5. Write a program to apply scaling and shearing to 2-Dimensional shapes.
6. Write a program to apply scaling and translation to 2-Dimensional shapes.
7. Write a program to apply translation and rotation to 2-Dimensional shapes.
8. Write a program to apply translation and shearing to 2-Dimensional shapes.
9. Write a program to apply scaling and reflection to 2-Dimensional shapes
10. Write a program to apply translation and reflection to 2-Dimensional shapes.
11. Write a program to apply rotation and shearing to 2-Dimensional shapes.
12. Write a program to apply rotation and reflection to 2-Dimensional shapes.
13. Write a program to apply composite scaling and rotation to 2-Dimensional shapes.
14. Write a program to apply composite translation and rotation to 2-Dimensional shapes.
15. Write a program to apply composite translation and scaling to 2-Dimensional shapes.
16. Write a program to clip the lines fallen outside the window using Cohen Sutherland line clipping.
17. Write a program to clip the polygon region fallen outside the window using Hodgeman Sutherland polygon clipping algorithm.
18. Write a program to apply scaling and rotation to 3-Dimensional shapes.
19. Write a program to apply scaling and translation to 3-Dimensional shapes.
20. Write a program to apply translation and rotation to 3-Dimensional shapes.

**List of Experiments:**

1. Torsional Pendulum- Rigidity Modulus
2. Co efficient of Viscosity- burette method
3. Thermal Conductivity of bad conductor- Lee's disc Method
4. Determination of wavelength of Laser
5. Junction Diode – Characteristics
6. Half wave rectifier
7. Full wave rectifiers
8. Zener Diode- Characteristics
9. Zener Diode- Voltage regulator
10. Transistor characteristics
11. Single stage Amplifier using Transistor
12. Construction of AND, OR, NOT gates by using Diode

**UNIT I****9 3 0**

**MS.NET Framework Introduction :** .NET Framework - an Overview, Framework Components, Framework Versions, Types of Applications which can be developed using MS.NET, MS.NET Base Class Library, MS.NET Namespaces , MSIL / Metadata and PE files, The Common Language Runtime (CLR), Managed Code, MS.NET Memory Management / Garbage Collection , Common Type System (CTS), Common Language Specification (CLS), Types of JIT Compilers, Security Manager

**UNIT II****9 3 0****C# INTRODUCTION:**

**Developing Console Application-** Introduction to Project and Solution in Studio, Entry point method – Main, Compiling and Building Projects , Compiling a C# program using command line utility CSC.EXE, **Language Basics-** Data types & Variables declaration, Reference Type and Value Type, Implicit and Explicit Casting, Casting between other data types, Boxing and Unboxing, Enum and Constant.

**UNIT III****9 3 0**

**INTRODUCTION TO OBJECT ORIENTED FEATURES:** Object, Class, Relationship between Class and Object, Encapsulation, Inheritance, Namespace, Interface and Polymorphism, Exception Handling, Delegates

**UNIT IV****9 3 0**

Operators, Operator Overloading, Method Overloading, Control Statements, Working with Arrays, Structures, Working with Methods, Pass by value and by reference and out parameters

**UNIT V****9 3 0**

**WORKING WITH ADO .NET:**ADO.NET Architecture – ADO.NET Connected and Disconnected Models – XML and ADO.NET – Simple and Complex Data Binding– Data Grid View Class.

**Total number of hours: 60 Hrs****TEXT BOOKS:**

1. Programming in C# – E. Balagurusamy, 5th Reprint, Tata McGraw Hill, 2004. (For Programming Examples)
2. S. Thamarai Selvi and R. Murugesan “A Textbook on C# “, Pearson Education, 2003.
3. Stephen C. Perry “ Core C# and .NET”, Pearson Education,2006.
4. Pro C# with .NET 3.0 – Andrew Troelsen, Special Edition, Dream tech Press, India, 2007.

**REFERENCES:**

1. Jesse Liberty, “Programming C#”, Second Edition, O’Reilly Press, 2002.
2. Robinson et al, “Professional C#”, Fifth Edition, Wrox Press, 2002.
3. Herbert Schildt, “The Complete Reference: C#”, Tata McGraw Hill, 2004.
4. C#: The Complete Reference – Herbert Schildt, Tata McGraw Hill, 2004.
5. Thuan Thai and Hoang Q. Lam, “. NET Framework Essentials”, Second Edition, O’Reilly, 2002.

<b>HBCS14G11</b>	<b>WEB DESIGN</b>	<b>3</b>	<b>1</b>	<b>0</b>	<b>4</b>
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**UNIT – I****9 3 0**

Intermediate HTML: Introduction – unordered list – nested and ordered list – Basic HTML Tables – Intermediate HTML table and Formatting – basic HTML Forms and Formatting.

**UNIT – II**

**9 3 0**

More Complex HTML Forms – Frameset Element – Nested Frameset. Style Sheets and Graphics: Introduction to Style sheets – Formatting Text by Using Style Sheets – Formatting Paragraphs by Using Style Sheets

**UNIT – III**

**9 3 0**

Graphics: Selecting a Graphics Format – Preparing Graphics for Web Use – Inserting Graphics – Arranging Elements on the Page – Controlling Image Size and Padding.

**UNIT – IV**

**9 3 0**

Hyper linking from Graphics – Utilizing Thumbnail Graphics – Including Alternate Text for Graphics. **Navigation:** Creating Navigational Aids – Creating Tables – Formatting Tables Layouts: Creating Division-Based Layouts

**UNIT – V**

**9 3 0**

Creating User Forms – Using Frames for Layout – Incorporating Audio and Video Dynamic HTML: Introduction

**Total number of hours: 60 Hrs**

**TEXT BOOK**

Microsoft Step by Step – HTML and XH, Faithe Wempen, Prentice Hall of India Private Limited, New Delhi, 2006

<b>HBCS14G12</b>	<b>SOFTWARE ENGINEERING</b>	<b>3</b>	<b>0</b>	<b>0</b>	<b>3</b>
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**UNIT I** **9 0 0**

**SOFTWARE PROCESS**

Introduction –S/W Engineering Paradigm – life cycle models (water fall, incremental, spiral, WINWIN spiral, evolutionary, prototyping, object oriented) - system engineering – Computer based system – verification – validation – life cycle process – development process – system engineering hierarchy.

**UNIT II** **9 0 0**

**SOFTWARE REQUIREMENTS**

Functional and non-functional - user – system –requirement engineering process – feasibility studies – requirements – elicitation – validation and management – software prototyping – prototyping in the software process – rapid prototyping techniques – user interface prototyping - S/W document. Analysis and modeling – data, functional and behavioral models – structured analysis and data dictionary.

**UNIT III** **9 0 0**

**DESIGN CONCEPTS AND PRINCIPLES**

Design process and concepts – modular design – design heuristic – design model and document. Architectural design – software architecture – data design – architectural design – transform and transaction mapping – user interface design – user interface design principles. Real time systems - Real time software design – system design – real time executives – data acquisition system - monitoring and control system. SCM – Need for SCM – Version control – Introduction to SCM process – Software configuration items.

**UNIT IV** **9 0 0**

**TESTING**

Taxonomy of software testing – levels – test activities – types of s/w test – black box testing – testing boundary conditions – structural testing – test coverage criteria based on data flow mechanisms – regression testing – testing in the large. S/W testing strategies – strategic approach and issues - unit testing – integration testing – validation testing – system testing and debugging.

**UNIT V** **9 0 0**

## **SOFTWARE PROJECT MANAGEMENT**

Measures and measurements – S/W complexity and science measure – size measure – data and logic structure measure – information flow measure. Software cost estimation – function point models – COCOMO model- Delphi method.- Defining a Task Network – Scheduling – Earned Value Analysis – Error Tracking - Software changes – program evolution dynamics – software maintenance – Architectural evolution. Taxonomy of CASE tools.

**Total number of hours: 45 Hrs**

### **TEXT BOOK**

1. Roger S.Pressman, Software engineering- A practitioner's Approach, McGraw-Hill International Edition, 5th edition, 2001.

### **REFERENCES**

1. Ian Sommerville, Software engineering, Pearson education Asia, 6th edition, 2000.
2. Pankaj Jalote- An Integrated Approach to Software Engineering, Springer Verlag, 1997.
3. James F Peters and Witold Pedrycz, "Software Engineering – An Engineering Approach", John Wiley and Sons, New Delhi, 2000.
4. Ali Behforooz and Frederick J Hudson, "Software Engineering Fundamentals", Oxford University Press, New Delhi, 1996.

<b>HBMG14001</b>	<b>ENVIRONMENTAL STUDIES</b>	<b>3</b>	<b>0</b>	<b>0</b>	<b>3</b>
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## **UNIT I**

### **INTRODUCTION TO ENVIRONMENTAL STUDIES**

**9 0 0**

Definition, Scope and importance – Need for Public awareness – Types of resources – Utilization of forest resources, water resources, Mineral resources, food resources, energy resources and land resources- Dams and their effects on forest and tribal people-conflicts over water- equitable use of resources for sustainable life styles.

## **UNIT II**

### **ECOSYSTEMS AND BIODIVERSITY**

**9 0 0**

Kinds of ecosystems- Structure and functions of an ecosystems- Energy flow within the ecosystem –Productivity- food chains and Tropic Levels- Ecological Pyramids- value of biodiversity – Biodiversity at global, National & local levels – Hot spots of Biodiversity –Threats to biodiversity – Endangered and Endemic species of India – Conservation of Biodiversity.

## **UNIT III**

### **ENVIRONMENTAL POLLUTION**

**9 0 0**

Environmental Pollution, sources, effects-control measures for air pollution, water pollution, Noise pollution, Land pollution, Marine pollution, e-waste pollution, Solid Waste Management- Disaster Management.

## **UNIT IV**

### **ENVIRONMENTAL MANAGEMENT**

**9 0 0**

Introduction - Environmental Management – climate change - population growth – Nuclear Accidents and Holocaust- Human Health and Human Rights- Environmental Ethics- Environmental Legislation- public awareness – Role of information Technology in Environmental & human health.

## **UNIT V**

### **CASE STUDIES**

**9 0 0**

Visit to a local area to document environmental assets (River/forest/grassland/hill/mountain) - Study of common plants, insects, birds- Study of simple ecosystems-pond, river, hill slopes – Visit to a local polluted site (Urban/Rural/ Industrial/ Agricultural).

**Total No of Periods : 45**



**Text Book:**

1. T.Meenambal, "Environmental Science and Engineering", MJP Publishers, Chennai, 2009.

**Reference Books:**

1. Iftikharuddin, "Principles of Environmental science and Engineering", Sooraj Publication, 2006.

2. G.Masters, "Environmental Engineering", New Centurion Book House, New Delhi, 2006.

3. Rajagopal, "Environmental Engineering", Oxford University Press, New Delhi.

4. Biny Joseph, "Environmental Engineering", Tata McGraw Hills, 2006.

1. Write a program to display addition, subtraction, multiplication and division of two number using console applications.
2. Program to display the addition using the windows application.
3. Write a program to convert input string from lower to upper and upper to lower case.
4. Write a program for simple calculator using windows application.
5. Write a program to work with forms using C#.NET.
6. Write a Program in C# to Check whether a String / number is Palindrome or not.
7. Write a program to reverse a given string using C#.
8. Write a program for windows application to compare & concatenate two strings.
9. Write a program for connectivity with Oracle database.
10. Write a program to access data source through ADO.NET.

1. Write HTML code to develop a web page having the background in red and title “My First Page” in any other color, giving details of your name, age, address.
2. Write HTML code to design a page containing a text in a paragraph giving suitable heading style.
3. Create a HTML page to show different attribute of Font tags - italic, bold, underline.
4. Write a HTML code to create a web page of blue color and display links in red color.
5. Write HTML code to create a Webpage that contains an image at its left hand side of the page, when user clicks on the image; it should open another web page.
6. Create a web Page using HREF tag having the attribute ALINK, VLINK.
- 7 Create a web page, when user clicks on the link it should go to the bottom of the page.
8. Write a HTML code to create a web page of pink color and display marquee text in red color.
9. Write a web page to display list of names using ordered & unordered list.
10. Create a HTML document containing a nested list showing the content page of any book.
11. Create a web page to display a table having two rows and two columns and fill in the data in the table created.
12. Create a web page having two frames one containing links and another with contents of the link. When link is clicked appropriate contents should be displayed on Frame.
13. Create a simple form accepting – Name, Register No. and Submit Button

**UNIT-I****9 3 0**

Electronic Commerce Framework, Traditional vs. Electronic business applications, the anatomy of E-commerce applications.

**UNIT-II****9 3 0**

Network infrastructure for E-Commerce - components of the I-way - Global information distribution networks - public policy issues shaping the I-way. The internet as a network infrastructure. The Business of the internet commercialization.

**UNIT-III****9 3 0**

Security and firewalls - client server network security - firewalls and network security - data and message security - encrypted documents and electronic mail.

**UNIT-IV****9 3 0**

Electronic Commerce and World Wide Web, consumer oriented E-commerce, Electronic payment systems, Electronic data interchange (EDI), EDI applications in business, EDI and E-commerce EDI implementation.

**UNIT-V****9 3 0**

Intraorganizational Electronic Commerce supply chain management Electronic Commerce catalogs, Document Management and digital libraries

**Total number of hours: 60 Hrs****Text Book**

R. Kalakota and A. B. Whinston, Frontiers of Electronic Commerce, Addison Wesley, 1996.

**Reference Books**

1. R.Kalakota and A.B.Whinston, Readings in Electronic Commerce, Addison Wesley, 1997.
2. David Kosiur, Understanding Electronic Commerce, Microsoft Press, 1997.
3. Soka, From EDI to Electronic Commerce, McGraw Hill, 1995. 4. Saily Chan, Electronic Commerce Management, John Wiley, 1998.

<b>HBCS14G14</b>	<b>DATA MINING</b>	<b>3</b>	<b>1</b>	<b>0</b>	<b>4</b>
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**UNIT-I:****9 3 0**

Introduction - What is Data mining , Data mining - important Data mining - various kind of data - Data mining Functionalities - Various kinds of Patterns Pattern Interesting Classification of Data mining Systems Data mining Task Primitives Integration of Data Mining System Major issues in Data Mining.

**UNIT-II: 930**

Data Processing - Process the Data Descriptive Data Summarization - Measuring Central Tendency Dispersion of Data Graphic Displays of - Basic Descriptive Data Summaries Data Cleaning Data Integration and Transformation data Reduction.

**UNIT- III: 930**

Data Warehouse OLAP Technology An overview - Data Warehouse Multidimensional Data Model Data Warehouse Architecture Data Warehouse Implementation.

**UNIT-IV: 930**

Mining - Frequent Patterns Associations Correlations - Basic Concepts Road Map Efficient Scalable Frequent Tamest Mining methods Mining - Various Kinds of Association rules.

**UNIT-V: 930**

Applications Trends - Data mining Applications Data mining - System Products Research Prototype Additional Themes on Data Mining Social impact of Data mining Trends in Data mining.

**Total number of hours: 60 Hrs**

**Text Book:**

1. Data Mining ( Concepts and Techniques ) Second Ed, Jiawei Han and Micheline Kamber, Morgan Kaufmann Publishers ( An imprint of Elsevier )  
(Chapter 1: 1.1 -1.9, 2: 2.1 - 2.5, 3: 3.1-3.4, 4: 5.1 - 5.3, 5: 11.1 - 11.6)

**Reference Books:**

1. Data Mining ( Next Generation Challenges and Future Directions), Karguta, Joshi, Sivakumar & Yesha, Prentice Hall of India ( 2007 )
2. Data Mining (Practical Machine Learning Tools and Techniques (II Edition), Ian H. Witten & Eibe Frank, Morgan Kaufmann Publishers (An imprint of Elsevier)
3. Data Warehousing, Data mining & OLAP (Edition 2004), Alex Benson, Stephen V. Smith, Tata McGraw – Hill.

<b>HBMG14G01</b>	<b>ENTREPRENEURSHIP DEVELOPMENT</b>	<b>3</b>	<b>0</b>	<b>0</b>	<b>3</b>
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**UNIT - I 900**

Entrepreneur –Meaning – Definition – Characteristics – Functions – Role of Entrepreneurs in the economic development – Classification of entrepreneurs – Factors affecting entrepreneurial growth.

**UNIT – II****9 0 0**

Entrepreneurship – Concept – Distinction between Entrepreneur and Entrepreneurship - Entrepreneurship Development Programs – Objectives - Stages in EDP- Pre-training Stage – Training phase – Post Training – Evaluation and Feedback of EDP.

**UNIT - III****9 0 0**

Project Identification - Sources of ideas – Preliminary evaluation and testing of ideas – Constraints - Project formulation – Stages- Feasibility study and Feasibility Report – Selection Criteria.

**UNIT – IV****9 0 0**

Project Report - Project Appraisal – Technical – commercial appraisal –Financial appraisal– Sources of finance – Steps to star an industrial unit.

**UNIT – V****9 0 0**

Incentives and subsidies of State and Central Govt. – Aims – Backward areas – Industrial Estates – Role of DIC,SISI, TCO in entrepreneurial growth

**Total number of hours: 45 Hrs****Text Books:**

1. P.N. Singh – Developing Entrepreneurship for Economic Growth
2. Guide to Entrepreneurs – Industrial Development – Govt. of Tamil Nadu – SIPCOT

<b>HBCS14G15</b>	<b>MOBILE COMMUNICATION</b>	<b>3</b>	<b>0</b>	<b>0</b>	<b>3</b>
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**Unit I:****9 0 0****Communication fundamentals**

Introduction - Wireless Transmission - Frequencies for Radio Transmission - Signals - Antennas - Signal propagation.

**Unit II:****9 0 0****MAC and Communication systems**

Introduction to Medium access control - Motivation for a specialized MAC – SDMA – FDMA - TDMA-CDMA, Telecommunication systems – GSM.

**Unit III:** **9 0 0**

**Wireless Standards**

Introduction to Wireless LAN - Infrared vs. Radio Transmission - IEEE 802.11 - HIPERLAN - Bluetooth. Wireless ATM - WATM Services.

**Unit IV:** **9 0 0**

**Mobile Network Issues**

Mobile network layer - Mobile IP - Mobile transport layer - Traditional TCP - Indirect TCP - Snooping TCP, Mobile TCP.

**Unit V:** **9 0 0**

**Mobile Applications**

World Wide Web - Hyper Text Transfer Protocol - Hypertext mark-up language –Next generation- Wireless Application Protocol.

**Total number of hours: 45 Hrs**

**Text Book:**

1. Jochen Schiller, Mobile Communications – 2/e, Pearson Education, 2008

<b>HBCS14P01</b>	<b>PROJECT</b>	<b>0</b>	<b>0</b>	<b>12</b>	<b>10</b>
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Students are expected to carry out the following:

- (i) Implement the Design using suitable technologies.
- (ii) Generate the test cases.
- (iii) Demonstrate the solution with suitable user interface.
- (iv) Prepare a project report consolidating the phase-I and II activities.



## **ELECTIVE – I**

<b>HBCS14E01</b>	<b>MULTIMEDIA SYSTEMS</b>	<b>3</b>	<b>0</b>	<b>0</b>	<b>3</b>
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**UNIT- I** **9 0 0**

Definition - Classification - MM application - MM H/w - MM s/w - CDROM - DVD.

**UNIT-II** **9 0 0**

MM Audio: Digital medium - Digital audio technology - sound cards - recording - editing - MP3 - MIDI fundamentals - Working with MIDI - audio file formats - adding sound to MM project.

**UNIT-III** **9 0 0**

MM TEXT: Text in MM - MM graphics: coloring - digital imaging fundamentals - development and editing - file formats - scanning and digital photography

**UNIT-IV** **9 0 0**

MM Animation: Computer animation fundamentals - Kinematics - morphing - animation s/w tools and techniques. MM Video: How video works - broadcast video standards - digital video fundamentals - digital video production and editing techniques - file formats.

**UNIT-V** **9 0 0**

MM Project: stages of project - MM skills - design concept - authoring - planning and costing – MM team

**Total number of hours: 45 Hrs**

**TEXT BOOKS:**

1. Tay Vaughan- Multimedia making it work- Fifth edition – TMH, New Delhi 2002.  
(Unit 1, 2 & 3)
2. Fred Halsall – Multimedia communications – Fourth Indian reprint, 2004 (unit 4 & 5)

**REFERENCE BOOKS:**

1. Multimedia Magic - S.Gokul revised and updated second edition - BPB
2. Multimedia Making it Work - Tay Vaughen 6th edition - TMH

<b>HBCS14E02</b>	<b>USER INTERFACE DESIGN</b>	<b>3</b>	<b>0</b>	<b>0</b>	<b>3</b>
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**UNIT I**

**9 0 0**

**Introduction:** Human – Computer Interface – Characteristics of Graphics Interface – Direct Manipulation Graphical System – Web User Interface – Popularity – Characteristic & Principles.

**UNIT II**

**9 0 0**

**Human Computer Interaction :** User Interface Design Process – Obstacles – Usability –Human Characteristic In Design – Human Interaction Speed – Business Functions –Requirement Analysis – Direct – Indirect Methods – Basic Business Functions – Designs Standards – System Timings .

**UNIT III**

**9 0 0**

**Windows:** Characteristics – Components – Presentation Styles – Types – Managements – Organizations – Operations – Web Systems – Device – Based Controls Characteristics –Screen – Based Controls – Operate Control – Text Boxes – Selection Control – Combination Control .

**UNIT IV**

**9 0 0**

**Multimedia:** Text For Web Pages – Effective Feedback - Guidance and Assistance – Internationalization – Accessibility – Icons – mage – Multimedia – Coloring.

**UNIT V**

**9 0 0**

**Windows Layout – Test:** Prototypes – Kinds Of Tests – Retest – Information Search – Visualization – Hypermedia – WWW- Software Tools.

**TOTAL NO. OF HOURS – 45 Hrs**

**TEXT BOOK:**

1. Wilbent. O. Galitz, “The Essential Guide to User Interface Design”, John Wiley & Sons, 2001.

**REFERENCE BOOKS:**

1. Ben Scheiderman, “Design the User Interface”, Pearson Education, 1998.  
 2. Alan Cooper,” The Essential of User Interface Design”, Wiley – Dream Tech Ltd., 2002

<b>HBCS14E03</b>	<b>OPEN SOURCE SOFTWARE</b>	<b>3</b>	<b>0</b>	<b>0</b>	<b>3</b>
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**UNIT I**

**9 0 0**

**OPEN SOURCE**-Introduction: Open Source – Open Source vs. Commercial Software – What is Linux? - Free Software – Where I can use Linux? Linux Kernel – Linux Distributions

**UNIT II**

**9 0 0**

**LINUX** -Introduction: Linux Essential Commands - File system Concept - Standard Files - The Linux Security Model - Vi Editor - Partitions creation - Shell Introduction - String Processing - Investigating and Managing Processes - Network Clients - Installing Application

**UNIT III**

**9 0 0**

**APACHE** -Introduction - Apache Explained - Starting, Stopping, and Restarting Apache - Modifying the Default Configuration - Securing Apache - Set User and Group - Consider Allowing Access to Local Documentation - Don't Allow public\_html Web sites - Apache control with .hatches

**UNIT IV**

**9 0 0**

**MySQL**-Introduction to MY SQL - The Show Databases and Table - The USE command - Create Database and Tables - Describe Table - Select, Insert, Update, and Delete statement - Some Administrative detail - Table Joins - Loading and Dumping a Database. 27

**UNIT V**

**9 0 0**

**PHP** -PHP Introduction- General Syntactic Characteristics - PHP Scripting - Commenting your code - Primitives, Operations and Expressions - PHP Variables - Operations and Expressions Control Statement - Array - Functions - Basic Form Processing - File and Folder Access - Cookies - Sessions - Database Access with PHP - MySQL - MySQL Functions - Inserting Records - Selecting Records - Deleting Records - Update Records.

**TOTAL NO. OF HOURS – 45 Hrs**

**TEXT BOOK:**

1. "Open Source Web Development with LAMP using Linux, Apache, MySQL, Perl and PHP", James Lee and Brent Ware, Dorling Kindersley (India) Pvt. Ltd, 2008

**REFERENCE BOOK:**

1. "Setting Up LAMP: Getting Linux, Apache, MySQL & PHP and working Together", Eric Rosebrock, Eric Filson, Published by John Wiley and Sons, 2004.

**ELECTIVE – II**

<b>HBCS14E04</b>	<b>CLOUD COMPUTING</b>	<b>3</b>	<b>0</b>	<b>0</b>	<b>3</b>
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**Unit I** **9 0 0**

**Cloud Computing Basics**

Cloud Computing Overview - Cloud Components -Infrastructure -Services -Applications -Storage - Database Services - Intranets and the Cloud - Hypervisor Applications -When You Shouldn't Use Cloud Computing - Benefits - Scalability -Knowledgeable Vendors - Security -Limitations

**Unit II** **9 0 0**

**The Business Case for Going to the Cloud** -Cloud Computing Services -Infrastructure as a Service - Platform as Service -Software as a Service -Software plus Services -Operational Benefits

**Unit III** **9 0 0**

**Cloud Computing Technology** - Hardware and Infrastructure - Clients-Security – Network Services - Accessing the Cloud – Platforms - Web Applications-Web APIs-Web Browsers

**Unit IV** **9 0 0**

**Cloud Storage** – Overview - Cloud Storage - Providers-Standards – Application – Client Infrastructure Service - Cloud Computing at Work - Software as a Service – Overview - Driving Forces - Company Offerings – Industries - Software plus Services – Overview - Mobile Device Integration – Providers - Microsoft Online

**Unit V** **9 0 0**

**Developing Applications**-Google-Microsoft-Troubleshooting-Local Clouds and Thin Clients-Virtualization in Your Organization-Server Solutions-Thin Clients-Case Study-Migrating to the Cloud

**Total Number of Hours: 45 Hrs**

**Text Book:**

1. Bob Hughes, Mikecoterrell, "Software Project Management", Third Edition, Tata McGraw Hill, 2004.

**Reference Books:**

1. Ramesh, Gopaldaswamy, "Managing Global Projects", Tata McGraw Hill, 2001.
2. Royce, "Software Project Management", Pearson Education, 1999.
3. Jalote, "Software Project Management in Practice", Pearson Education, 2002.

<b>HBCS14E05</b>	<b>OBJECT ORIENTED ANALYSIS &amp; DESIGN</b>	<b>3</b>	<b>0</b>	<b>0</b>	<b>3</b>
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**Unit – I: Introduction** **9 0 0**

Object Basics – Classes and Objects – Inheritance – Object relationship – Dynamic binding – OOSD Life Cycle – Analysis – Design – Implementation – Testing.

**Unit – II: Methodology and UML****9 0 0**

Overview of methodologies – OMT, Booch methodology, Jacobson methodology; Patterns - frameworks - unified approach – UML – Static and Dynamic Modeling, UML diagrams.

**Unit - III****9 0 0**

Use - Case models - object analysis - object relations - attributes - methods, class and object responsibilities - case study.

**Unit - IV****9 0 0**

Design processes - design axioms - class design - object storage - object interoperability - case studies.

**Unit - V****9 0 0**

Testing Strategies - Test cases - Test plan - Continuous testing - debugging principles - case study.

**Total Number of Hours: 45 Hrs****Text Book:**

1. Ali Bahrami - Object Oriented Systems Development - McGraw Hill International Edition - 1999
2. Grady Booch - Object Oriented Analysis and Design - Addison Wesley.

<b>HBCS14E06</b>	<b>CRYPTOGRAPHY AND NETWORK SECURITY</b>	<b>3</b>	<b>0</b>	<b>0</b>	<b>3</b>
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**UNIT – I****9 0 0**

Security problems in computer networks – kinds of security breaches – security services – conventional encryption model – classical encryption techniques.

**UNIT – II****9 0 0**

Block cipher – design principles – Data Encryption Standard (DES) – triple DES – International Data Encryption Algorithm (IDEA) – RC2, RC5 – Blowfish – CAST 128 – Confidentiality using conventional encryption.

**UNIT – III****9 0 0**

Principles of public key cryptosystems – RSA Algorithm – Elliptic curve cryptography – message authentication and Hash function – MD5 message digest Algorithm – Secure Hash Algorithms (SHA – 1).

**UNIT – IV****9 0 0**

Digital signatures and Authentication protocols – Kerberos – X.509 directory Authentication service – E-mail security – Pretty Good privacy, S/MIME – IP Security – Web security.

**UNIT – V****9 0 0**

Intruders – Intrusion techniques – Intrusion detection – viruses and related threats – worms – Firewalls.

**Total Number of Hours: 45 Hrs****Text Books:**

1. William Stallings, “Cryptography and Network Security: Principles and practice”, Pearson Education Inc., 1999.
2. Simonds, “Network Security”, McGraw Hill, 1988.

**References:**

1. Baxer, “Networking Security”, McGraw Hill, 1996.
2. Derek Atkins, “Internet Security”, Techmedia, 1998.

**ELECTIVE – III**

<b>HBCS14E07</b>	<b>MANAGEMENT INFORMATION SYSTEMS</b>	<b>3</b>	<b>0</b>	<b>0</b>	<b>3</b>
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**Unit I****9 0 0**

**Organizations, Management and the Networked Enterprise** :Information Systems in Global Business- Global E-Business-Information Systems-Strategy Systems- Ethical and Social issues in Information System - Analyzing Business Resource for an Enterprise System.

**Unit II****9 0 0**

**IT Infrastructure:** IT infrastructure- Emerging Technology - Business Intelligence: Databases and Information Management – Telecommunication - Internet and Wireless Technology - Information Security Systems

**Unit III****9 0 0**

**Key System Application for the Digital Age :** Enterprise application- Ecommerce-Digital Markets- Digital Goods- Managing knowledge- Decision Making – Enterprise portal design

**Unit IV****9 0 0**

**Building and Managing Systems :** Building Systems - Project Management- Establishing Business values - Managing Change - Managing Global System - Redesigning Business Processes- Case studies

**Unit V****9 0 0**

**Advanced concepts in Information System :** Enterprise Resource Planning - modules : Human Resources, Finance – Accounting - Production & Logistics - Supply Chain Management – CRM - Procurement - Management System Object Oriented modeling- case studies

**Total Number of Periods: 45****Text Books:**

1. Management information systems – James A, O’ Brian, 7th Edition, TMH Publisher, 2007.
2. Management Information Systems: Managing the Digital Firms: Kenneth C. Laudon, Jane P. Laudon, Pearson Education, TMH, 2008.

**Reference Books:**

1. Introduction to Information Systems, James A. O'Brien, Northern Arizona University  
George M. Marakas, University of Kansas, 2007.
2. Information System for Modern Management - Ross and Clagget – Prentice-Hall of India Pvt. Ltd.  
2004
3. Enterprise Resource Planning, Alexis Leon, TMH, 2007.

<b>HBCS14E08</b>	<b>SOFTWARE TESTING</b>	<b>3</b>	<b>0</b>	<b>0</b>	<b>3</b>
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**UNIT – I****9 0 0**

Building a Software Testing Strategy – Software Testing Design Techniques – Software Testing Tools and Selection of Test Automation Products – Software Testing Lifecycle and Software Testing Process

**UNIT – II****9 0 0**

Testing Effort Estimation and Test Planning – Software Test Effort Estimation Technique – Pre-Development Testing Requirements and Design Phase – Best Practices in Program Phase Unit, System and Integration Testing

**UNIT - III****9 0 0**

A Case Study on Acceptance Testing – Implementation an Effective Test Management Process – Building an Effective Test Organization – Performance Issues and Optimization Techniques

**UNIT – IV****9 0 0**

Choosing a Load Testing Strategy – Dodging the Bullets – Validating Mission-Critical Server Software for Reliability – Probing the Blind Spot – Testing in Today’s Business and Usability

**UNIT - V****9 0 0**

Testing of Web-based Applications – Testing of Embedded Software System used in Aerospace Applications – Testing Application for Security – Testing Metrics, Best Practices and Benchmarks

**Total number of hours: 45 Hrs**

**TEXT BOOK**

1. “Software Testing Effective Methods, Tools and Techniques”, Renu Rajani and Pradeep Oak, Tata McGraw-Hill

<b>HBCS14E09</b>	<b>SOFTWARE PROJECT MANAGEMENT</b>	<b>3</b>	<b>0</b>	<b>0</b>	<b>3</b>
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**Unit I** **9 0 0**

Software Management Renaissance: Conventional Software Management – Evolution of Software Economics – Improving Software Economics - The Old Way and the New.

**Unit II** **9 0 0**

A Software Management Project Management Process Framework: Life-Cycle Phases – Artifacts of the Process – Model - Based Software Architectures – Work Flows of the Process – Check Points of the Process.

**Unit III** **9 0 0**

Software Management Disciplines: Iterative Process Planning – Project Organizations and Responsibilities – Process Automation.

**Unit IV** **9 0 0**

Software Management Disciplines: Project Control and Process Instrumentation – Tailoring the Process.



**Unit V****900**

Risk Management: Introduction – Risk – Categories of risk – A framework for dealing with risk – Risk Identification – Risk assessment – Risk planning – Risk management – Evaluating risks to schedule - Applying the PERT technique – Monte Carlo simulation – Critical chain concepts.

**Total number of hours: 45 Hrs****Text Book(s)**

1. Software Project Management, Walker Royce, Pearson Education
2. Software Project Management, Bob Hughes & Mike Cottrell
3. Software Project Management, Joel Henry, Pearson Education
4. Software Engineering, Roger S. Pressman, TMH Publications.