# B. Voc. Information Technology
# Department of Information Technology

## SYLLABUS
**(For Students admitted in the Academic year 2017 – 2018)**

# Bishop Heber College (Autonomous)

Affiliated to Bharathidasan University
(Reaccredited with 'A' Grade by NAAC with a CGPA of 3.58 out of 4)
Recognized by UGC as "College of Excellence"
Tiruchirappalli – 620 017
South India

Signature of the HOD

Dr.J.JOHN RAYBIN JOSE
Associate Professor & Head
Department of Information Technol...
Bishop Heber College (Autonomo...
Tiruchirappalli - 620 017.

## Programme Structure for Students Admitted in the Academic year 2017 – 2018

### Semester I – NSQF Level 4

| Component | *Course Title* | Course Code | QP | Credits | Course Type | | | Total Hours | MARKS | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | T | P | I | | CIA | ESE | Total |
| General Component | Language – 1 (Tamil / Hindi / French) | U16IG01 | SSC/Q0508 | 2 | T | | | 30 | 25 | 75 | 100 |
| | Communication Skills in English – 1 | U16IG02 | | 2 | T | - | - | 30 | 25 | 75 | 100 |
| | Fundamentals of Information Technology | U16IG03 | | 3 | T | - | - | 45 | 25 | 75 | 100 |
| | Programming with C and C++ | U16IG04 | | 3 | T | - | - | 45 | 25 | 75 | 100 |
| | Value and Life Oriented Education | U16IG05 | | 2 | T | | | 30 | 25 | 75 | 100 |
| ***TOTAL (General Components)*** | | | | **12** | | | | **180** | | | |
| Skill Component | English Language Lab – 1 | U16ISP1 | | 2 | | P | | 30 | 40 | 60 | 100 |
| | Mathematics for Competitive Examinations – 1 | U16ISP2 | | 2 | | P | | 30 | 40 | 60 | 100 |
| | PC Software Packages Lab | U16ISP3 | | 4 | | P | - | 60 | 40 | 60 | 100 |
| | C and C++ Programming Lab | U16ISP4 | | 4 | | P | - | 60 | 40 | 60 | 100 |
| | Project Work – 1 | U16ISF1 | | 6 | - | - | I | 180 | 40 | 60 | 100 |
| ***TOTAL (Skill Components)*** | | | | **18** | **-** | | | **360** | - | | |
| ***GRAND TOTAL*** | | | | **30** | **-** | | | **540** | - | | |

### Semester II – NSQF Level 5

| Component | *Course Title* | Course Code | QP | Credits | Course Type | | | Total Hours | MARKS | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | T | P | I | | CIA | ESE | Total |
| General Component | Language – 2 (Tamil / Hindi / French) | U16IG06 | SSC/Q0801 | 2 | T | - | - | 30 | 25 | 75 | 100 |
| | Communication Skills in English-2 | U16IG07 | | 2 | T | - | - | 30 | 25 | 75 | 100 |
| | Database Management Systems | U16IG08 | | 3 | T | - | - | 45 | 25 | 75 | 100 |
| | Data Communication Networks | U16IG09 | | 3 | T | - | - | 45 | 25 | 75 | 100 |
| | Environmental Studies | U16IG10 | | 2 | T | - | - | 30 | 25 | 75 | 100 |
| ***TOTAL (General Component)*** | | | | **12** | | | | **180** | | | |
| Skill Component | English Language Lab – 2 | U16ISP5 | | 2 | | | | 30 | 40 | 60 | 100 |
| | Mathematics for Competitive Examinations – 2 | U16ISP6 | | 2 | - | P | - | 30 | 40 | 60 | 100 |
| | DBMS Lab | U16ISP7 | | 4 | - | P | - | 60 | 40 | 60 | 100 |
| | Computer Hardware & Networking Lab | U16ISP8 | | 4 | - | P | - | 60 | 40 | 60 | 100 |
| | Project Work – 2 | U16ISF2 | | 6 | - | - | I | 180 | 40 | 60 | 100 |
| ***TOTAL (Skill Component)*** | | | | **18** | **-** | | | **360** | - | | |
| ***GRAND TOTAL*** | | | | **30** | **-** | | | **540** | - | | |

**Qualification Packs: SSC/Q0508 – Junior Software Developer SSC/Q0801 – Infrastructure Engineer**

## Semester III – NSQF Level 6

| Component | *Course Title* | Course Code | QP | Credits | Course Type | | | | MARKS | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | T | P | I | Total Hours | CIA | ESE | Total |
| General Component | Programming with Java | U16IG11 | SSC/Q0509 | 3 | T | - | - | 45 | 25 | 75 | 100 |
| | Operating Systems | U16IG12 | | 3 | T | - | - | 45 | 25 | 75 | 100 |
| | Digital Principles and Computer Organization | U16IG13 | | 4 | T | - | - | 60 | 25 | 75 | 100 |
| | Personal Effectiveness | U16IG14 | | 2 | T | | | 30 | 25 | 75 | 100 |
| ***TOTAL (General Components)*** | | | | **12** | | | | **180** | | | |
| Skill Component | Java Programming Lab | U16ISP9 | | 4 | - | P | - | 60 | 40 | 60 | 100 |
| | Operating Systems Lab | U16ISP10 | | 4 | - | P | - | 60 | 40 | 60 | 100 |
| | Multimedia Lab | U16ISP11 | | 4 | - | P | - | 60 | 40 | 60 | 100 |
| | Project Work – 3 | U16ISF3 | | 6 | - | - | I | 180 | 40 | 60 | 100 |
| ***TOTAL (Skill Components)*** | | | | **18** | **-** | | | **360** | - | | |
| ***GRAND TOTAL*** | | | | **30** | **-** | | | **540** | - | | |

## Semester IV – NSQF Level 6

| Component | *Course Title* | Course Code | QP | Credits | Course Type | | | | MARKS | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | T | P | I | Total Hours | CIA | ESE | Total |
| General Component | Data Structures and Algorithms | U16IG15 | SSC/Q0509 | 3 | T | - | - | 45 | 25 | 75 | 100 |
| | .NET Programming | U16IG16 | | 3 | T | - | - | 45 | 25 | 75 | 100 |
| | Microprocessors and its Applications | U16IG17 | | 4 | T | - | - | 60 | 25 | 75 | 100 |
| | Professional Ethics and Cyber Laws | U16IG18 | | 2 | T | - | - | 30 | 25 | 75 | 100 |
| ***TOTAL (General Component)*** | | | | **12** | | | | **180** | | | |
| Skill Component | Data Structures & Algorithms Lab | U16ISP12 | | 4 | - | P | - | 60 | 40 | 60 | 100 |
| | .NET Programming Lab | U16ISP13 | | 4 | - | P | - | 60 | 40 | 60 | 100 |
| | Web Programming Lab | U16ISP14 | | 4 | - | P | - | 60 | 40 | 60 | 100 |
| | Project Work – 4 | U16ISF4 | | 6 | - | - | I | 180 | 40 | 60 | 100 |
| ***TOTAL (Skill Component)*** | | | | **18** | **-** | | | **360** | - | | |
| ***GRAND TOTAL*** | | | | **30** | **-** | | | **540** | - | | |

## Semester V – NSQF Level 7

| Component | *Course Title* | Course Code | QP | Credits | Course Type | | | | MARKS | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | T | P | I | Total Hours | CIA | ESE | Total |
| General Component | Mobile Computing Technologies | U16IG19 | SSC/Q0501 | 4 | T | - | - | 60 | 25 | 75 | 100 |
| | Programming with PHP and MySQL | U16IG20 | | 3 | T | - | - | 45 | 25 | 75 | 100 |
| | Principles of Marketing | U16IG21 | | 2 | T | - | - | 30 | 25 | 75 | 100 |
| | Software Engineering / Software Project Management / Software Testing | U16IG5:1 U16IG5:2 U16IG5:3 | | 3 | T | - | - | 45 | 25 | 75 | 100 |
| ***TOTAL (General Components)*** | | | | **12** | | | | **180** | | | |
| Skill Component | Mobile Application Development Lab | U16ISP15 | | 6 | - | P | - | 90 | 40 | 60 | 100 |
| | PHP and MySQL Programming Lab | U16ISP16 | | 6 | - | P | - | 90 | 40 | 60 | 100 |
| | Project Work – 5 | U16ISF5 | | 6 | - | - | I | 180 | 40 | 60 | 100 |
| ***TOTAL (Skill Components)*** | | | | **18** | **-** | | | **360** | - | | |
| ***GRAND TOTAL*** | | | | **30** | **-** | | | **540** | - | | |

## Semester VI – NSQF Level 7

| Component | *Course Title* | Course Code | QP | Credits | Course Type | | | | MARKS | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | T | P | I | Total Hours | CIA | ESE | Total |
| General Component | SharePoint Technologies | U16IG22 | SSC/Q0501 | 4 | T | - | - | 60 | 25 | 75 | 100 |
| | Information Security | U16IG23 | | 3 | T | - | - | 45 | 25 | 75 | 100 |
| | Entrepreneurial Development | U16IG24 | | 2 | T | - | - | 30 | 25 | 75 | 100 |
| | Web Service Technologies / User Experience Design Principles / Human Computer Interaction | U16IG6:1 U16IG6:2 U16IG6:3 | | 3 | T | - | - | 45 | 25 | 75 | 100 |
| ***TOTAL (General Component)*** | | | | **12** | | | | **180** | | | |
| Skill Component | SharePoint Applications Lab | U16ISP17 | | 6 | - | P | - | 90 | 40 | 60 | 100 |
| | Information Security Lab | U16ISP18 | | 6 | - | P | - | 90 | 40 | 60 | 100 |
| | Project Work – 6 | U16ISF6 | | 6 | - | - | I | 180 | 40 | 60 | 100 |
| ***TOTAL (Skill Component)*** | | | | **18** | **-** | | | **360** | - | | |
| ***GRAND TOTAL*** | | | | **30** | **-** | | | **540** | - | | |

**Qualification Pack: SSC/Q0501 – Software Developer**

# Department of Information Technology
# Bishop Heber College (Autonomous), Tiruchirappalli – 620 017

## B. Voc. (Information Technology)
**(Syllabus for students admitted in the Academic year 2017 – 2018)**

**Features of the Programme:**

- Skill Oriented Curriculum to meet the Industry Requirements.
- Curriculum Aligned to the Qualification Packs specified by the NSDC.
- Industry involvement in Training and Development of Skills.
- Academic flexibility with multiple entries and exits.
- Vertical Mobility in higher education leading to Research.
- Awarded with both the University Degree and the NSDC Partner Certification (NASCOM) on successful completion of the programme.
- Empowerment to become an entrepreneur.
- Placement opportunities provided through Industry Partners.

**Eligibility:** 10 +2 or its equivalent in any stream

| Duration | Award | NSQF Level | Credits Earned | Total Hours |
|---|---|---|---|---|
| 1st Semester | Certificate in Information Technology | 4 | 30 | 540 |
| 1st Year | Diploma in Information Technology | 5 | 60 | 1080 |
| 2nd Year | Advanced Diploma in Information Technology | 6 | 120 | 2160 |
| 3rd Year | B. Voc. Degree in Information Technology | 7 | 180 | 3240 |

**KANINI TAMIL**

# fzpdpj jkpo

**SEMESTER: I** **COURSE CODE: U16IG01**
**CREDITS : 2** **HOURS/WEEK: 3**

**myF – 1** **(6 Hours)**

**fz;dpa;d; tuyhW - njhlf;ffhyg gad;ghL - Kjy> ,uz;lhk;> %d;whk;> ehd;fhk jiyKiwf; fz;dp - fz;dpa;d; mikg;G - fzpdpj; jkpo tuyhW - fz;dpj jkpo; tsh;r;rpa;y muR - jd;dhh;t mikg;G kw;Wk jd;egh gq;fs;g;Gfs;.**

**myF – 2** **(6 Hours)**

**jkpo mr;Rg;gjpg;G gh;khw;wk; - vk;. V];. NthL> vf;]y> gth;gha;z;l;> - fz;dpj jkpo fiyr nrhw;fs mwpKfk; - fiyr;nrhy gad;ghLr r;f;fy;fSk; jPh;TfSk;.**

**myF** – 3 **(6 Hours)**

**jkpo tpirg;gyif mwpKfk; - gy;NtW jkpo t;irg;gyiffs- jkpo vOj;JU mwpKfk; - xUq;Fwp vOjJU mwpKfk - gytpj t;irg;gyiffshy Neh;e;j r;f;fy;fSk; mtw;Wf;fhd jPh;Tk; - xUq;Fwp vOj;jikg;g;d; NjitAk; mjd e;iwFiwfSk;.**

**myF** – 4 **(6 Hours)**

**gy;NtW jkpo nkd;nghUs;fs - gy;NtW jkpo vOj;JUf;fs - jkpo vOj;JU khw;wp - ,yf;fzj jpUj;j; - nrhwgpio jpUj;jp - re;jpg;gpio jpUj;j; - jkpo xy;khw;wp.**

**myF** – 5 **(6 Hours)**

**kpd; jkpo; - kpd;D}y - kpd;D}y tuyhWk; mjd gad;ghLfSk - k;d;D}y tiffs - kpd;D}y cUthf;fk; - k;d; E}yfk : mwpKfKk; gad;ghLk - ,e;j;a kpd;D}yfk;.**

**gh E}w;fs**

1. **Re;juk;> - ‘fz;dpj; jkpo;”**
2. **vk;. t;. vk;. Kj;J kzpfz;ld> - ‘fzpg;nghwp mwpt;ay; fw;gpj;jy”**
3. **kh. Md;Nlh gP;lu;> ‘jkpOk; fz;g;nghwpAk;”**
4. **Jiuaurd> - ‘,izaKk; ,dpa jkpOk;”**
5. **Jiu kzpfz;ld> - ‘jkpo;f; fz;dp ,iza;g; gad;ghLfs”**
6. **nghd;d itf;Nfh> - ‘,izaj jkpo; tuyhW”**
7. **%. Godpaggd> “,izaKk;; jkpOk;”**

**COMMUNICATION SKILLS IN ENGLISH – I**

**SEMESTER: I** **COURSE CODE: U16IG02**
**CREDITS : 2** **HOURS/WEEK: 3**

***Objectives:***

- *To help students develop the skill of listening, reading and speaking.*
- *To enable the students to analyze the element of language and establish the appropriate relationship among linguistic components.*

**UNIT – 1:** **(6 Hours)**
Grammar
Correction of common errors
Transformation of Sentences

**UNIT – 2:** **(6 Hours)**
Pronunciation
Stress and Intonation
Reading Comprehension

**UNIT – 3:** **(6 Hours)**
Word Building
Vocabulary-I
Vocabulary-II

**UNIT – 4: Reading Skills** **(6 Hours)**
Types of Communication
Notices, Agendas and Minutes
Business Correspondence

**UNIT – 5: Speaking Skills 2** **(6 Hours)**
Listening Skills
Teamwork Skills
Emotional Intelligence Skills

## Books for Study:


1. Board of Editors, Communication in English and Study Skills
2. G. M. Sundaravalli, A.S. Kamalakar, P. Kusuma Harinath, Communication and Soft Skills
3. Bikram K. Das, "Functional Grammar and Spoken and Written Communication in English", Orient Blackswan Pvt. Ltd., Kolkatta, 2006.

**FUNDAMENTALS OF INFORMATION TECHNOLOGY**

**SEMESTER: I** **COURSE CODE: U16IG03**
**CREDITS : 3** **HOURS/WEEK: 4**

***Objectives:***

- *To provide an overall understanding on the concepts and technologies associated with the Computer Hardware, Software, Database Management, Communication Networks, World Wide Web, Information Security, Multimedia and other recent advancements in the fields of Computing, Communication and Information Technologies.*

**UNIT – 1: Introduction to Computer Systems (9 Hours)**

Introduction to Computers – Generations of Modern Computers – Classification of Digital Computer Systems – Anatomy of a Digital Computer – Computer Architecture – The Number System – Central Processing Unit and Memory Units – Secondary Storage Devices – Input Devices – Output Devices

**UNIT – 2: Computer Software and Software Development (9 Hours)**

Introduction to Computer Software & Software Development – Programming Languages – Operating Systems – General Software Features and Trends – **Database Management Systems :** Introduction to Database Management Systems – Database Architecture and Design – Relational Database Management Systems and SQL – Modern DBMS.

**UNIT – 3: Telecommunications (9 Hours)**

Introduction– Computer Networks – Communication Systems – Distributed Data Processing – **Internet and Intranets:** Internet & WWW – Overview of Electronic mail – Introduction to Intranets – Introduction to E-Commerce and E-Business – Introduction to Web Design – Overview of Web Technologies

**UNIT – 4: Security (9 Hours)**

Introduction to Computer Security – Cryptography – Computer Viruses, Bombs, and Worms – **Multimedia and Virtual Reality:** Introduction to Multimedia – Multimedia and its applications – Introduction to Virtual Reality

**UNIT – 5: New Technologies in Information Technology (9 Hours)**

Introduction to Hypermedia – Artificial Intelligence and Business Intelligence – Knowledge Discovery in Database – Data Warehouses and Data Marts – Data Mining and OLAP – ERP – Supply Chain Management – Customer Relationship Management – GIS – **Applications of Information Technology:** Computers in Business and Industry – Home – Education and Training – Entertainment, Science, Medicine and Engineering – Mobile computing and Business on the Internet

## Books For Study:


1. Alexis Leon, Mathews Leon, "**Fundamentals of Information Technology**", Second Edition, Vikas Publishing House Pvt. Ltd., Chennai, 2009.
2. Reema Thareja, **"Fundamentals of Computers",** Oxford University Press, 2014.

# PROGRAMMING WITH C AND C++

**SEMESTER: I** **COURSE CODE: U16IG04**
**CREDITS : 3** **HOURS/WEEK: 4**

**Objective:**

- *To provide problem solving and programming skills with the facilities in C language.*

**UNIT – 1: Overview of C** **(9 Hours)**

History - Importance of C – Sample Programs - Basic Structure of C programs- Character Set – C tokens – keywords and Identifiers – Constants – Variables – Data types – Declaration of variables – Assigning values to variables – Symbolic constants. - **Operators and Expressions:** Introduction – Arithmetic operators – Relational Operators – Logical operators – Assignment Operators – Increment and Decrement operators – Conditional operators- Bitwise Operators – Special Operators – Expressions – **Managing input and output operators:** Reading a character – Writing a Character – Formatted input and output – **Decision making and Branching:** If statement, Switch Statement – goto Statement – **Decision Making and Looping:** While – Do-while – For loop.

**UNIT – 2: Arrays** **(9 Hours)**

One, Two and Multidimensional arrays – **Functions :** User defined functions –Mathematical and String Handling functions- Category of functions – Recursion – Scope and life time of variables in functions. - **Structures and Unions:** Introduction – Structure definition – Giving values to members – Structure Initialization – Comparison of Structure variables – Arrays of structures – Arrays within structures – Structures within structures – Structures and functions – Unions.

**UNIT – 3: Pointers** **(9 Hours)**

Introduction – Understanding pointers – Accessing the address of a variable through input pointer – Pointer expressions – Pointer Increments and Scale factor – Pointers and Arrays – Pointers and character strings – Pointers to functions – Pointers and structures – Points on pointers – **File Management:** Introduction – Defining and opening a file – Closing a file – Input or Output operations on files – Error handling during I/O operations – Random access to files – Command line arguments. Preprocessors.

**UNIT – 4: Introduction to Object Oriented Programming** **(9 Hours)**

OOP Paradigm - OOP Concepts – Benefits of OOP – OOP Languages – Functions in C++ - Classes and Objects – Constructors and Destructors – Operator Overloading – Type Conversions – Inheritance.

**UNIT – 5: Pointers** **(9 Hours)**

Pointers - Virtual Functions – Polymorphism – Managing Console Operations – Working with Files – Exception Handling – String Manipulations.

## Books for Study :


1. E. Balagurusamy, "**Programming in ANSI C**", Tata McGraw-Hill Publishing Company Ltd.
2. Ashok N. Kamthane, "**Programming with ANSI and TURBO C**", Pearson Education, 2004.
3. E. Balagurusamy, "**Object Oriented Programming with C++**", 5th Edition, Tata McGraw Hill Education Pvt. Ltd., New Delhi, 2011.
4. Herbert Schildt, "**C++ The Complete Reference**", 5th Edition., Mc Graw Hill Education, 2012.

**ENGLISH LANGUAGE LAB – I**
**(Listening, Speaking and Reading)**

**SEMESTER: I** **COURSE CODE: U16IG05**
**CREDITS : 2** **HOURS/WEEK: 2**

1. Tenses and Connected Speech Listening
2. Speech Sounds and Intonations
3. Spoken English in day-to-day practical context
4. Loud and Silent Reading
5. Presentations
6. Discussions
7. Conversations and Role Plays

# MATHEMATICS FOR COMPETITIVE EXAMINATIONS - 1

**SEMESTER: I** **COURSE CODE: U16ISP2**
**CREDITS : 2** **HOURS/WEEK: 2**

***Objective:***

- *To develop arithmetic skills required to face competitive examinations.*

**Unit – 1** **(6 Hours)**
Numbers - HCF & LCM – Decimal Fractions – Simplification.

**Unit – 2** **(6 Hours)**
Square roots and Cube roots - Percentage – Average – Ratio and Proportion - Partnership.

**Unit – 3** **(6 Hours)**
Profit and Loss - Time and Work- Pipes and Cisterns - Time and Distance

**Unit – 4** **(6 Hours)**
Problems on Trains – Problems on Boats and Streams - Problems on Numbers - Problems on ages.

**Unit – 5** **(6 Hours)**
Simple interest – Compound interest Area - Volume & Surface Areas.

**Book for Study:**

1. R.S. Aggarwal, Objective Arithmetic S. Chand and Company Ltd., New Delhi, 2003.

# PC SOFTWARE PACKAGES LAB

**SEMESTER: I** **COURSE CODE: U16ISP3**
**CREDITS : 4** **HOURS/WEEK: 5**

## MS – WORD

1. Creating document, Cutting, Copying, Pasting text.
2. Manipulating Font Type, Font Size, Font Color.
3. Using Auto Shapes.
4. Table Background Color, Border Color, Border Style.
5. Table Style, Caption.
6. Merging, Splitting Columns, Inserting, Deleting Rows, Columns.
7. Paragraph Columns, Drop Cap, Indentation and Underlining Styles.
8. Inserting Pictures, Page Borders and Shading, Clip Art.
9. Mail Merge.
10. Water mark, Header and Footer.
11. Working with Smart Art.
12. Excel chart in Ms Word.
13. Bullets and Numbering.
14. Document Password.
15. Page Orientation and Margins.

## MS – EXCEL

1. Creating, Opening, Saving Worksheets.
2. Formatting Cells.
3. Student Mark List Preparation.
4. Manipulating IF Function.
5. Electricity Bill Preparation.
6. Sorting : Ascending, Descending, Custom.
7. Splitting Text into Cell.
8. Filtering.
9. Data Validation.
10. Consolidation.
11. Salary Bill Preparation.
12. Working with Functions
13. Dropdown Controls
14. Line, Column and Pie Charts
15. Importing, Exporting Text Files, Removing Duplicates

## MS – POWER POINT

1. Creating, Opening and Saving Power Point Presentations.
2. Header and Footer, Slide Number, Pictures
3. Translation and Animation
4. Presentation as Slide Show and Video
5. Working with Flow Charts and Symbols
6. Action and Link Buttons
7. Master Slide
8. Smart Art
9. Themes and Variants
10. Using Outline View
11. Applying Shapes; Callouts, Stars and Banners
12. Working with Equation and Symbols
13. Using various Charts.
14. Working with Tables
15. Working with Colors and Shapes
16. Working with Word Art and Clip Art

# C AND C++ PROGRAMMING LAB

**SEMESTER: I** **COURSE CODE: U16ISP4**
**CREDITS : 4** **HOURS/WEEK: 5**

**C Programming Lab**

1. Operators
2. Mathematical functions
3. Type Conversion
4. Formatted Input / Output Operations
5. If statements
6. Switch Statement
7. Conditional Operator
8. Go to Statement
9. While Statement
10. Do-While Statement
11. For statements
12. Arrays
13. String Manipulations
14. Functions
15. Recursion
16. Structures
17. Arrays of Structures
18. Structures within Structures
19. Unions
20. Chain of Pointers
21. Array of Pointers
22. Input / Output Operations on Files
23. Random Operations on Files
24. Command Line Arguments
25. Dynamic Memory Allocation Statements
26. Macros
27. Control Directives

**C++ Lab**

1. Using Classes and Objects
2. Constructors and Destructors
3. Function and Operator Overloading
4. Using Inheritance
5. Implementing Polymorphism
6. Using Abstract Classes
7. Pointers to Derived Classes
8. Virtual Functions.
9. Using Encapsulation.
10. File Operations
11. String Manipulations
12. Exception Handling

# VALUE AND LIFE ORIENTED EDUCATION

**SEMESTER: I** **COURSE CODE: U16IG05**
**CREDITS : 3** **HOURS/WEEK: 4**

***Objectives:***

- *To understand Indian culture and heritage and envisage a transformed India*
- *To have a better insight of self-worth*
- *To equip to face challenges and march towards implementation of personal goals*
- *To forge and nurture healthy relationships*
- *To appreciate and maintain the sanctity of marriage*

**UNIT - 1: Shaping "Incredible India" (6 Hours)**

Glorious past – cultural heritage and values - Present scenario – Indian constitution with respect to human values – Shaping new India

**UNIT - 2: Human Values Development and transformation of self (6 Hours)**

Principles and values – Values of concern-three dimensions – self, interpersonal and social activities – Strategizing values – Self-identity – Self-discovery and Self-acceptance – Self-esteem – Personality development.

**UNIT - 3: Life Enrichment Skills (6 Hours)**

Purpose for life – mission and vision – Goal setting- characteristics of goals - Time management – levels of time management – categories of stress – factors leading to stress - stress management

**UNIT 4: Dynamics of interpersonal relationships (6 Hours)**

Building relationships- types of interpersonal relationship – Hints towards improving relationships - conflict management in relationship – emotional management

**UNIT 5: Gender, human Sexuality and marriage (6 Hours)**

Gender concepts – gender sensitivity – human sexuality – sexually transmitted diseases - marriage – purpose – complementary responsibilities and commitment – building a happy home (do's and don'ts)

**Book for study:**

1. **" Human Values"**, All India Association for Christian Higher Education (AIACHE), New Delhi.

**INAIYAMUM TAMILUM**

# ,izaKk; jkpOk;

**SEMESTER: II** **COURSE CODE: U16IG06**
**CREDITS : 3** **HOURS/WEEK: 4**

**myF - 1** **(6 Hours)**

**,izak** mwpKfk; - **,izaj;jd tuyhWk; tsh;r;rp epiyAk - ,izag gad;ghLk ,d;iwa tho;tpaYk; - jkpo ,iza tuyhW - ,izaj;jpy jkpopd jlk;**

**myF - 2** **(6 Hours)**

**jkpoy jfty;** ghpkhwwk; - **kddQ;ry cUthffKk mjd gad;ghLfSk; - kddQ;ryd cs;slf;fk; - ,iza ,aq;Fjsq;fs; - ,izaj;jpy; jfty; cyhTjy> jfty NjLjy; - jkpo;j; NjLnghwpfs; - ,izaj;jpy; juTfisg; gjptwf;Fjy> gjpNtwWjy;**

**myF - 3** **(6 Hours)**

**tpf;fpg;gPbah** mwpKfk; - **tpf;fpg;gPbah ngah fhuzk; - Njhw;wk; tsh;r;rp - jkpo tpf;fpg;gPbah - tpf;fpg;gPbah fzf;F cUthf;fk; - tpf;fpg;gPbahty; jFe;j rhdwhjhuq;fSld flLiu vOJjy; kwWk; GJg;gpj;jy; - tpf;fpg;gPbahtpd cs;slf;ff; $Wfs; - cyf nkhopfspy; jkpo tpf;fpg;gPbah ngWk; ,lk;.**

**myF** – 4 **(6 Hours)**

**tiyg;G+** mwpKfk; - **mjd tsh;r;rpAk; tifg;ghLk - jkpo tiyg;G+f;fs; - tiyg;G+ cUthf;fk; - tiyg;G+ njhlq;Ftjw;fhd mbg;gilfs; - tiyg;G+j; jiyg;Gk; Kfthpak; - gf;f tbtikg;Gj; njhpT - tiyg;G+tpd cs;slf;ff; $Wfs; - tiyg;G+g; gjptpLif.**

**myF** - 5 **(6 Hours)**

**,izar; Nritfs;** mwpKfKk; **mjd gad;ghLk - tq;fpr NritfSf;F tpz;zg;gpj;jy - ,uapy; gazr;rPl;L Kd;gjpT nra;jy - Nghl;bj Njh;TfSf;F tpzzg;gpj;jy - Ntiy tha;g;G mYtyfg; gjpT kw;Wk GJg;gpj;jy.**

**<u>ghl E}w;fs</u>**

1. **Jiu kzpfz;ld> - ‘,izaKk; jkpOk;”**
2. **Jiuaurd> - ‘,izaKk; ,dpa jkpOk;”**
3. **Jiu kzpfz;ld> - ‘jkpo;f; fzpdp ,izag gad;ghLfs”**
4. **nghd;d itf;Nfh> - ‘,izaj jkpo; tuyhW”**
5. **%. Godpag;gd;;> “,izaKk;; jkpOk;”**
6. **n[. tuehjd> - ‘,izaj;ij mwpNthk;”**
7. **,y. Re;juk;> - ‘fzpdpj; jkpo”**
8. **Jiu kzpfz;ld> - ‘,izaj;jpy; jkpo tiyg;G+f;fs”**

## ENGLISH FOR COMMUNICATION– 2

**SEMESTER: II** **COURSE CODE: U16IG07**
**CREDITS : 2** **HOURS/WEEK: 4**

***Objectives:***

- *To provide knowledge about English usage and discourse styles for use in day-to-day contexts.*
- *To initiate the skills of thinking, evaluating and writing.*

**UNIT – 1** **(6 Hours)**
Vocabulary Development
Written Communication
Spoken Communication

**UNIT – 2** **(6 Hours)**
Speeches
Presentations
Meetings

**UNIT – 3** **(6 Hours)**
Interview and Interviewing skills
Nonverbal Communication
Information Transfer

**UNIT – 4** **(6 Hours)**
Editing Skills
Reference Skills
Soft Skills

**UNIT – 5** **(6 Hours)**
Assertive Skills
Adaptability Skills
Problem-Solving Skills

**Books for Study:**


1. Communication in English and Study Skills (Board of Editors)
2. Communication and Soft Skills (G. M. Sundaravalli, A.S. Kamalakar, P. Kusuma Harinath)
3. Functional Grammar and Spoken and Written Communication in English (Bikram K Das)

# DATABASE MANAGEMENT SYSTEMS

**SEMESTER: II** **COURSE CODE: U16IG08**
**CREDITS : 3** **HOURS/WEEK: 4**

***Objectives:***

- *To provide understanding on the popular Relational Database Systems and techniques.*

## Unit – 1: Introduction to Database System (12 Hours.)

What is Database Management Systems? - File Management Systems - Database Management Systems - File Management Systems Vs Database Management Systems - An Overview of Database Management Systems - Data Model

## Unit – 2: Relational Model (12 Hours.)

Relational Database Primer - Relational Database Characteristics - Database Integrity – Keys - Entity and Referential Integrity - Views.

## Unit – 3: Database Design (12 Hours.)

Design Consideration - Functional Dependency - Normalization and Normal Forms (1NF, 2NF, 3NF, 4NF, 5NF) - E/R Modeling

## Unit – 4: Transaction (12 Hours.)

Transaction – Recovery - Concurrency – problems – Locking – Deadlocks - Transaction serializability. - Database security: Data classification - Threats and Risk – Cryptography - Digital signature - Database control - Users and Database Privileges - Types of Privileges.

## Unit – 5: Query Execution and Optimization (12 Hours.)

Query Processing – Using Indexes - Distributed Database - Distributed Database concepts: Database Architecture - Advantages of Distributed Database - Distributed Database Techniques - Distributed concurrency - Control and Recovery.

## Book for Study:

Atul Kahate, "Introduction to Database Management Systems", 1st Indian Reprint, Pearson Education, Delhi, 2004. (**Chapters:** 2, 3, 4, 6, 7, 8)

## Book for Reference:

Abraham Silberchatz, Henry F. Korth and S. Sudharshan, "Data Base System concepts" Mc Graw Hill International – Fourth Edition.

# DATA COMMUNICATION NETWORKS

**SEMESTER: II** **COURSE CODE: U16IG09**
**CREDITS : 3** **HOURS/WEEK: 4**

***Objective:***

- *To impart good Understanding on the Characteristics, Specifications, Standards, Protocols and Techniques of the modern Computer based Communication Systems.*

## UNIT – 1: Data Communications (9 Hours)

**Overview:** A Communication model- Data Communications– Networks– The Internet – **Protocol Architecture:** The TCP/IP protocol Architecture– The OSI Model –Standardization within a Protocol Architecture- **Data Transmission**: Concepts & terminology–Analog & Digital Data Transmission– Transmission Impairments **Guided & Wireless Transmission:** Guided Transmission Media– Wireless Transmission– Wireless Propagation.

## UNIT – 2: Digital Data Communication Techniques (9 Hours)

Asynchronous and Synchronous Transmission – Types of Errors – Error Detection – Error Correction – Line Configurations - **Data Link Control Protocols**: Flow Control – Error Control – High Level Data Link Control (HDLC) - **Multiplexing**: Frequency Division Multiplexing – Synchronous Time Division Multiplexing – Statistical Time Division Multiplexing – Asymmetric Digital Subscriber Line – xDSL.

## UNIT – 3: Circuit Switching and Packet Switching (9 Hours)

Switched Communications Networks–Circuit Switching Networks – Circuit Switching Concepts – Soft switch Architecture – Packet Switching Principles–X.25–Frame Relay **Asynchronous Transfer Mode:** Protocol Architecture – ATM Logical Connections – ATM Cells – Transmission of ATM Cells – ATM Service Categories.

## UNIT – 4: Routing in Switched Networks (9 Hours)

Routing in Packet Switching Networks **– Congestion Control in Data Networks:** Effects of Congestion – Congestion Control - Traffic Management. **Local Area Networks – LAN Overview:** Background – Topologies and Transmission Media – LAN Protocol Architecture – Bridges – Layer2 and Layer3 Switches.

## UNIT – 5: Communication Architecture and Protocols (9 Hours)

**Internetwork Protocols:** Basic Protocol Functions – Principles of Internetworking – Internet Protocol Operation – Internet Protocols (IPv4) – IPv6. **- Transport Protocols:** Connection Oriented Transport Protocol Mechanisms – TCP –TCP Congestion Control – UDP. **Internet Applications :** Electronic Mail – SMTP and MIME – Network Management (SNMP) – Internet Directory Service – Web Access - HTTP.

## Book for Study:

1. William Stallings, ***"Data and Computer Communications"***, 8th Edition**,** Pearson Education, 2007.

## Books for References

1. Behrouz A. Forouzan, ***"Data Communications and Networking"***, 4th Edition, Tata McGraw Hill Publishing Company, 2006.
2. Andrew S. Tannenbaum, David J. Wetherall, ***"Computer Networks"***, 5th Edition, Pearsons Education, 2011.

# ENVIRONMENTAL STUDIES

**SEMESTER: II** **COURSE CODE: U16IG10**
**CREDITS : 2** **HOURS/WEEK: 2**

**Unit – I: The Multidisciplinary nature of Environmental Studies**
Definition, Scope and Importance. Need for Public awareness

**Unit – II: Nature Resources:**
**Renewable and Non-renewable resources**
**Forest resources:** Use and over-exploitation, deforestation, case studies, Timber extraction, mining, dams and their effects on forests and tribal people. - **Water resources:** Use and over- utilization of surface and ground water, floods, drought, conflicts over water, dam benefits and problems. - **Mineral resources:** Use and exploitation, environmental effects of extracting and using mineral resources, case studies. - **Food resources:** World food problems, change4s caused by agriculture and overgrazing, effects of modern agriculture, fertilizer-pesticide problems, water logging, salinity case studies. - **Energy resources:** Growing energy needs, renewable and non renewable energy sources, use of alternate energy sources. Case Studies. - **Land resources:** Land as a resource, land degradation, man induced landslides, soil erosion and desertification. - Role of an individual I conservation of natural resources. - Equitable use of resources of sustainable lifestyles.

**Unit – III: Ecosystems: Ecosystems**
Concept of an ecosystem, Structure of an ecosystem, producers, consumers, decomposers, energy flow in the ecosystem, ecological succession, food chains, food webs and ecological pyramids. - Introduction, types, characteristics features, structure and function of ecosystem: - Forest ecosystem, - Grassland ecosystem, - Desert ecosystem, - Aquatic ecosystems (Ponds, streams, lakes, rivers, oceans, estuaries).

**Unit – IV: Biodiversity and its conservation:**
Introduction-definition : Genetic, species and ecosystem diversity, Biogeographical classification of India, value of biodiversity: Consumptive use, productive use, social ethical, aesthetic and option values, Biodiversity at global, National and local level, India as a megadiversity nation, Hot- spots of biodiversity, Threats to biodiversity : habit los, poaching of wildlife, man-wildlife conflicts, Endangered and endemic species of India, Conservation of biodiversity In-situ conservation of biodiversity.

**Unit – V: Environmental Pollution:**
Definition, Causes, effects and control measures of
a. Air Pollution b. Water Pollution c. Soil Pollution d. Marine Pollution
e. Noise Pollution f. Thermal Pollution g. Nuclear Hazards
Solid Waste Management: Causes, effects and control measures of urban and industrial wastes, role of an individual in prevention of pollution, pollution case studies.

**Unit – VI: Social Issues and the Environment:**
From unsustainable to sustainable development, Urban problems related to energy, water conservation, rain water harvesting, watershed management, resettlement and rehabilitation of people; its problems and concerns. Case studies, Environmental ethics: Issues and possible solutions, climate change, global warning, acid rain, ozone layer depletion, nuclear accidents and holocaust, case studies, wasteland reclamation, consumerism and waste products Environment Protection Act, Air (Prevention and Control of Pollution) Act, Forest (Conservation) Act, issues involved in enforcement of environmental legislation, public awareness.

**Unit – VII: Human Population and the Environment:**

Population growth, variation among nations, Population explosion-family welfare programme environment and human health, human rights, value education, HIV/AIDS, women and child welfare, role of information technology in environment and human health, case studies.

**Unit – VIII: Field Work: Environmental Service Learning (ESL)**

1. **Integrated learning:**
   **Survey and Planning:** Visit to a local area to document environmental assets-river/forest/grassland/hill/mountain, visit to a local polluted site - Urban/Rural/Industrial/Agricultural, study of common plants insects, birds, study of simple ecosystems-pond, river, hill slopes, etc.
2. **Service to the Community:** Action plan
3. **Student Voice:** Creating awareness and implementation of Action plan
4. **Civic Responsibility:** ESL activity of students and its effect on chosen community – Voice of the community
5. **Reflection:** Before, during and after the project – to draw links between social and personal aspects of the project and academic curriculum.

   The five elements of "Environmental Service Learning" incorporates – exploring/mapping local environments; making community partners; participating in local environmental service; reflecting on the learning which results from the service; and celebrate/communicating about environmental stewardship.

**ENGLISH LANGUAGE LAB – 2**
**(Remedial Grammar and Writing Skills)**

**SEMESTER: II** **COURSE CODE: U16ISP5**
**CREDITS : 2** **HOURS/WEEK: 2**

1. Types of Sentences
2. Tenses
3. Articles and Prepositions
4. Punctuations
5. Brainstorming and Gathering Information
6. Organizing Information and Writing the First Draft
7. Proof Reading
8. Descriptions
9. Narrations
10. Expositions
11. Persuasions
12. Essays
13. Paragraphs
14. Précis
15. Abstract
16. Leaving a Note
17. Preparing Agenda, Minutes etc.

# MATHEMATICS FOR COMPETITIVE EXAMINATIONS - 2

**SEMESTER: II** **COURSE CODE: U16ISP6**
**CREDITS : 2** **HOURS/WEEK: 2**

***Objective:***

- *To develop arithmetic skills required to face competitive examinations.*

**UNIT – 1** **(6 Hours)**
Surds & Indices - Allegation or Mixture – True discount – Banker's discount

**UNIT – 2** **(6 Hours)**
Stocks & Shares - Calendar - Clocks - Races & Games of Skill

**UNIT – 3** **(6 Hours)**
Linear Equation in Two Variables - Quadratic Equations

**UNIT – 4** **(6 Hours)**
Arithmetic and Geometric Progressions (A.P. & G.P.) - Geometry - Polygons

**UNIT – 5** **(6 Hours)**
Number Series - Tabulation - Pie-Chart - Bar-Graphs - Line Graphs

## Book for Study:

1. R.S. Aggarwal, Objective Arithmetic S. Chand and Company Ltd., New Delhi, 2003.

# DBMS LAB

**SEMESTER: II** **COURSE CODE: U16ISP7**
**CREDITS : 4** **HOURS/WEEK: 4**

1. Creating updating and inserting into databases & simple queries.
2. Uses of select statement – for queries using
    i. AND, OR, NOT Operators, WHERE clause.
    ii. UNION, INTERESECTION, MINUS.
    iii. Sorting and grouping.
3. Nested queries using SOL
    i. Sub queries
    ii. Joins
4. Built – in functions of SQL.
5. Creation of simple forms.
6. Use of indexes, creating views and querying in views.
7. Cursors, triggers and stored procedures and functions.
8. Case studies: - Use forms for database manipulations and generate appropriate reports for the following
    i. Student evaluation systems.
    ii. Pay – roll system.
    iii. Income tax calculations
    iv. Seat reservation Problem
    v. Mark sheet Preparation.
9. Creating new users
10. Granting and Revoking of Privileges to the users

# COMPUTER HARDWARE AND NETWORKING LAB

**SEMESTER: II** **COURSE CODE: U16ISP8**
**CREDITS : 4** **HOURS/WEEK: 4**

## Computer Hardware:

- **Introduction to Computers and Operating Systems:** Evolution of Personal Computers – Types of Computers – Operating Systems: DOS, Unix, Windows & Linux (Basics only).
- **PC Accessories and Functions:** Monitors & Types (CRT, LCD, TFT & LED) – Peripherals (Keyboard, Mouse, Speaker, etc.) – CPU - Processor and Types - Motherboard and Types – BIOS – CMOS – I/O Ports: Serial – Parallel – USB – AGP – VGA – PCI/ISA Slots – Game Port – Sockets – Buses (IDE, SATA, SCSI) – FDD Connectors - Jumper Settings - DIMM Slots - Front Panel Connectors – Hard Disk and Types, SMPS – Optical Storage Devices - I/O Buses – Memory - RAM and ROM - Imaging and Printing Devices: Printer, Scanner and Plotter.
- **Assembling:** Setting up the Processor, Cooler Fan & RAM – Fixing the Motherboard & SMPS - Mounting the Cabinet – Connecting the Cards & Devices: FDD – HDD – CD Drive – SMPS – CMOS & BIOS Setup.
- **Installation:** Fdisk – Partitioning – Formatting – File Systems (FAT & NTFS) – Installation: Operating System – Drivers - Printers – Basic Software - Antivirus.
- **Troubleshooting:** BIOS Problem- Identification of source for Beep Sound - Display Problem - Booting Problem - Operating System Problems – Hardware Issues – Printer Issues - Error Messages.

## Networking:

- **Components of the Computer Network: -** Familiarization with various Network devices, Connectors and Cables - Understanding the Layout of network - **Crimping & Punching -** Crimping practice with straight and cross CAT 5 cables - Punching practice in IO Box and patch panel - Crimping and making cables - **Cabling -** Create cabling in a lab with HUB/Switch and IO Boxes and patch panel. Fitting Switch Rack.
- **Installing & configure a Network -** Installing & Configuring a Peer-to-Peer - Network using Windows Software. - Connect computers using Bluetooth - **Configuration of Data Communication Equipment-** Connecting computers with Network with Drop cable and using Wi Fi configuration- Basic Programmable switch Configuration-Spanning Tree Protocol (STP) - Command Line Interface - IP Routing Process - Verifying Configuration
- **IP Addressing & TCP/IP -** IP Addressing technique (IP4/IP6) and Subnetting and Super netting the network - Installation and Configuration of TCP/IP Protocol - Practice TCP/IP Utilities : PING, IPCONFIG, HOSTNAME, ROUTE, TRACERT etc. - **Other Network Protocols -** Working with SMTP, TELNET, FTP, HTTP, SNMP, LDAP etc. - Practice on configuring DHCP.
- **Sharing Resource & Internet connection -** Sharing Resource and Advance Sharing Setting - Installing Proxy Server - Exposure and using Internet. Setting E-mail accounts. Conferencing - Installing and Configuring Internet - Connection on a PC using Broadband or Dongle - **Network Protection and troubleshooting -** Setting up basic protection using public keys and MAC address filters. Integrate wired with wireless network. Power over Ethernet (PoE). Troubleshooting wired and wireless network.
- **Control & monitoring of network devices -** Setting up of basic collaboration tool like NetMeeting for activities like chat, application sharing, remote desktop access and control, VoIP. Setup, IP camera for basic surveillance scenario, logging and monitoring of devices / locations - Use Linux Network Tools to check / maintain / Manage Network – **Installing and configuring Windows Server -** Configure services like Active Directory, DNS and DHCP. Configuration of broadband modem and sharing internet connection.

# PROGRAMMING WITH JAVA

**SEMESTER: III** **COURSE CODE: U16IG11**
**CREDITS : 4** **HOURS/WEEK: 4**

**Unit-I: OOP and Java (9 Hours.)**

Objects and Classes, - Encapsulation, - Inheritance, - Polymorphism, - Java Language, - The Primaries – Character Set, - Tokens, - Constants, - Variables, - Operators and Expressions, - Library Methods, - Strings, - I/O Streams, - Formatting the Output values, - Control Statements – If, - Switch, - Iterative Statements - While, - Do-While-For.

**Unit-II: Single and Two dimensional Arrays (9 Hours.)**

Methods, General form, invoking, - method overloading, - recursion, - Classes and objects General form, creation, - constructors - constructor overloading, copy constructor, - 'this' keyword, - Static members, - finalize method, - Inner class and anonymous classes, - Inheritance – inheriting, - abstract classes and final classes, - Interfaces – structure, implementation, - Interface inheritance.

**Unit-III: Packages (9 Hours.)**

Package Hierarchy- Import Statement, - Hiding the Classes, - Access Control Modifiers, - Applets – Life Cycle, - Applet Class, - Syntax of Applet Tag, - Methods in Graphics Class, - Threading, Life Cycle, Creating and Running, - Methods in Thread Class, - Priority Thread, - Synchronization, - Dead Lock, - Inter Thread Communication, - Applets Involving Threads.

**Unit-IV: Events Listeners (9 Hours.)**

Event Handling Methods, - Inheritance of Control Classes, - Labels, - Button Control, - Check Box Control, - Radio Button, - Choice Control, - List Control, - Scroll Bars, - Layouts and Panel, - Windows and Frames, - Menus and Dialogs, - Mouse Events and Listeners, Adapter Class and Inner Class, - Exception Handling – Default Exception – User Defined Exception Handling, - Exception and Error Classes, - Catch Block Searching Pattern, Throw and Throws.

**Unit – V: Networks (9 Hours.)**

Domain Names and Protocols, - Layers in Network Communication, - Ports, - TCP, Server - Socket Class, - Socket Class, - UDP Approach, - JDBC – Establishing Connection, - Creating Tables, - Enter Data, - Table Updating, - Use Of Prepared Statement, - Obtaining Metadata, - Using Transactions, - Files Creation, Reading/Writing Characters/Bytes/Primitive Data Types, - Random Access Files.

## Book for Study

Muthu C, "Programming in Java", Thompson Learning, 2004.

## Books for Reference:


1. Patrick Naughton& Hebert Schildt, **"The Complete Reference JAVA 2",** 3 ed,TMH, Delhi,
2. E. Balagursamy, **"Programming with Java – A Primer"**, Third Edition, Tata McGraw-Hill Publishing Company Limited, 2007

# OPERATING SYSTEMS

**SEMESTER: III** **COURSE CODE: U16IG12**
**CREDITS : 3** **HOURS/WEEK: 4**

***Objectives:***

- *To impart knowledge on aspects related with the working and scope of Operating Systems used in Personal Computing Systems.*

## Unit – 1: Operating System Overview (9 Hours.)

**Operating System Overview:** Operating systems objectives and functions – The Evolution of Operating Systems – Developments leading to Modern Operating Systems. - **Process Description and Control:** What is a process? – Process states – Process Description – Process control.

## Unit – 2: Threads, SMP and Micro Kernels (9 Hours.)

Processes and Threads **Concurrency: Mutual Exclusion and Synchronization**: – Principles of Concurrency - Mutual Exclusion Hardware Support. - **Concurrency: Deadlock**: – Principles - Deadlock Prevention - Deadlock Detection - Deadlock Avoidance Deadlock Detection – An Integrated Deadlock Strategy.

## Unit – 3: Memory Management (9 Hours.)

Memory Management Requirements – Memory Partitioning – Paging – Segmentation **- Virtual Memory:** - Hardware and Control Structures – Operating System Software.

## Unit – 4: Scheduling (9 Hours.)

Types of Uniprocessor Processor Scheduling – Uniprocessor Scheduling algorithms –Multi-Processor Scheduling – Real Time Scheduling.

## Unit – 5: I/O Management (9 Hours.)

I/O Devices – I/O Functions – I/O Design Issues – I/O Buffering – Disk Scheduling – RAID – Disk Cache - **File Management**: – Overview - File Organization and Access – File Directories - File Sharing – Record Blocking - Secondary Storage Management – File System Security.

## Book for Study:

**1.** William Stallings, ***"Operating Systems Internal and Design Principles"***, Sixth Edition, Pearsons Education, 2009.

## Book for Reference:

**1.** Charles Crowley, ***"Operating System–A Design Oriented Approach"***, IRWIN Publications Chicago, 1997.

# DIGITAL PRINCIPLES AND COMPUTER ORGANIZATION

**SEMESTER: III** **COURSE CODE: U16IG13**
**CREDITS : 3** **HOURS/WEEK: 4**

## Unit – I: Digital Principles (12 Hours)

Definition for Digital Signals – Digital Logic – **Number Systems and Codes:** – Binary Number System – Binary-to-Decimal Conversion – Decimal-to-Binary Conversion – Octal Numbers – Hexadecimal Numbers – ASCII Code – Excess-3 Code – Gray Code **- Digital Logic:** -Logic Gates – Universal Logic Gates – AND-OR-Invert Gates – Positive and Negative Logic. **- Combinational Logic Circuits: -** Boolean Laws and Theorems – SOP Method – Karnaugh Map – Pairs, Quads, Octets – Karnaugh Simplification – Don't Care Conditions – POS Method & Simplification – **Data Processing Circuits: -** Multiplexers – Demultiplexers – 1 of 16 Decoder – BCD to Decimal Decoder – Encoder.

## Unit – II: Arithmetic Circuits (14 Hours)

Binary Addition – Binary Subtraction – Unsigned Binary Numbers – Sign Magnitude Numbers – 2's Complement Representation – 2's Complement Arithmetic – Arithmetic Building Blocks – The Adder-Subtractor – **Flip Flops: -**RS Flip Flops – Edge Triggered RS Flip Flop – D Flip Flop – JK Flip Flop –Master Slave Flip Flop **- Registers: -** Types of Registers – Serial In Serial Out – Serial In Parallel Out – Parallel in Serial Out – Parallel In Parallel Out – Universal Shift Register – Applications of Shift Registers – **Counters:** Asynchronous Counter –Synchronous Counters – Changing the Counter Modulus – Decade Counters– Presettable Counters.

## Unit – III: Basic Computer Organization and Design (14 Hours)

Instruction Codes – Computer Registers – Computer Instructions – Timing and Control – Instruction Cycle – Memory Reference Instructions – Input, Output and Interrupts – Complete Computer Description – Design of Accumulator Logic. **- Central Processing Unit: -** General Register Organization – Stack Organization – Instruction Formats – Addressing Modes – Data Transfer and Manipulations – Program Control – RISC.

## Unit IV: Input – Output Organization (10 Hours)

Peripheral Devices – Input-Output Interface – Asynchronous Data Transfer – Modes of Transfer – Priority Interrupts –Direct Memory Access – I/O Processor – Serial Communication.

## Unit V: Memory Organization (10 Hours)

Memory Hierarchy – Main Memory – Auxiliary Memory – Associative Memory – Cache Memory – Virtual Memory – Memory Management Hardware.

## Books for Study


1. Donald P Leach, Albert Paul Malvino, Goutam Saha, **"Digital Principles and Applications"**, 7th Edition, TMH Publications, Delhi, 2011.
2. Morris Mano. M. **"Computer System Architecture"**, 3rd Edition, Pearsons Education, 2005.

# PERSONAL EFFECTIVENESS

**SEMESTER: III** **COURSE CODE: U16IG14**
**CREDITS : 2** **HOURS/WEEK: 2**

***Objectives:***

- *To enable the learner to acquire skills that will help him/her to be an effective individual.*

**Unit - I Independence**

1 Being Proactive in roles and relationships in life.
2 Beginning with the End in Mind

**Unit – II Independence**

3 Putting First Things First

**Unit - III Interdependence**

4 Think Win-Win: Genuine feelings for mutually beneficial solutions or agreements in relationships.
5 Seek First to Understand, Then to be understood - Use empathic listening to be genuinely influenced by a person, who compels them to reciprocate the listening and take an open mind to being influenced by you.

**Unit - IV Interdependence**

6 Synergize - Combine the strengths of people through positive teamwork, so as to achieve goals that no one could have done alone.

**Unit V Continuous improvements**

7 Sharpen the Saw - Balance and renew your resources, energy, and health to create a sustainable, long-term, effective lifestyle. lt primarily emphasizes exercise for physical renewal, prayer(meditation, yoga, etc.) and good reading for mental renewal. It also mentions service to society for spiritual renewal.

## Book for Study

1. Seven Habits of Highly effective people - Steven Covey

# JAVA PROGRAMMING LAB

**SEMESTER: III** **COURSE CODE: U16IG14**
**CREDITS : 4** **HOURS/WEEK: 5**

***Objectives:***

- *To provide Object Oriented Programming expertise with the facilities available in JAVA.*

1. Classes and Objects
2. Inheritance
3. Interfaces
4. Packages
5. Exception Handling
6. Multithreading
7. Collection Interfaces
8. Applet Programming
9. Applying AWT concepts
10. Applying swing concepts
11. JDBC

# OPERATING SYSTEMS LAB

**SEMESTER: III** **COURSE CODE: U16IG14**
**CREDITS : 4** **HOURS/WEEK: 4**

***Objectives:***

- *To provide hands on experience with LINUX Operating System and Shell Scripting.*

1. Simple Shell Commands
2. Directory Commands
3. Vi Editor Commands
4. Searching a word in a file
5. Display the content of a file.
6. Display Login Greeting Script
7. Display current date, time, username and current directory.
8. Printing the given number in reverse order.
9. Mark list preparation
10. Menu driven program to create, sort and display a file.
11. Menu driven program to copy, edit, rename and delete a file.
12. Sorting numbers in ascending and descending order.
13. Sorting names in ascending and descending order.
14. User Creation
15. Group Creation

# MULTIMEDIA LAB

**SEMESTER: III** **COURSE CODE: U16IP11**
**CREDITS : 4** **HOURS/WEEK: 4**

**Objective:** *To provide hands on training required to handle various components of Multimedia such as text, graphics, animation, audio and video.*

1. Working with Text and Styles using Adobe Photoshop.
2. Creating shapes and painting in Adobe Photoshop (Using Drawing tool, Pen tool, Painting tools, and Brush tools).
3. Working with Image size and Resolution in Adobe Photoshop.
4. Working with Layers in Adobe Photoshop.
5. Transforming and Retouching Images using Adobe Photoshop (Cropping, Transforming objects, Clone stamping, Retouching).
6. Working with color Adjustments in Adobe Photoshop.
7. Creating Frame-by-Frame Animation & Tweened Animation–(motion tween and shape tween) using Macromedia Flash.
8. Working with textual effects in Macromedia Flash.
9. Creating buttons and working with scenes in Macromedia Flash.
10. Creating animation with sound using Macromedia Flash.
11. Recording, Editing and Mixing audio clips using Adobe Audition.
12. Capturing, Editing and Rendering video clips using Adobe Premier.

# DATA STRUCTURES AND ALGORITHMS

**SEMESTER: IV** **COURSE CODE: U16IG15**
**CREDITS : 4** **HOURS/WEEK: 4**

**Objectives:**

- *To provide a good understanding of commonly used Data Structures and Algorithms.*

## Unit – 1: Arrays and Sequential Representations **(12 Hours.)**

Ordered Lists – Stacks and Queues – Evaluation of Expressions – Multiple stacks and queues – Singly Linked Lists – Linked Stacks and Queues – Polynomial Addition – Doubly Linked Lists.

## Unit – 2: Trees **(12 Hours.)**

Binary tree representations – Tree traversal – Threaded binary trees – Binary tree representation of trees – Set representations – decision trees – Game Trees and counting Binary Trees – Graphs and Representations – Traversals. – Activity Networks – Topological sort.

## Unit – 3: Algorithms **(12 Hours.)**

Conventions – Writing Structured programs – Analyzing algorithms – Sorting – Heap sort – Binary Search – Finding the maximum and minimum – Merge sort – Quick sort – Selection Problem.

## Unit – 4: Greedy Method **(12 Hours.)**

Greedy Method: The general method – Optimal storage on tapes – Knapsack problem – Job sequencing with deadlines – Optimal merge patterns – Minimum spanning trees – Single source shortest paths.

## Unit – 5: Backtracking **(12 Hours.)**

The General method – 8-Queen's problem – Sum of subsets – Graph colouring – Hamiltonian cycles – Knapsack problem.

## Books for Study:

1. Ellis Horowitz and Sartaj Sahni, **"Fundamentals of Data Structures"**, Galgotia Publications., Delhi, Reprint 2001.
2. Ellis Horowitz and Sartaj Sahni, **"Fundamentals of Computer Algorithms"**, Galgotia Publications., Delhi, Reprint 2001.

# .NET PROGRAMMING

**SEMESTER: IV** **COURSE CODE: U16IG16**
**CREDITS : 3** **HOURS/WEEK: 4**

## *Objective:*

- *To provide familiarity on Server-Side Programming using .NET framework*

## Unit – 1: The .NET Platform and the Web (12 Hours.)

The Pathway to Web applications - The Web Client/Server model - Components of ASP.NET and the .NET Framework - Overview of Internet Information Server – Overview of ASP.NET - .NET Conmen Language Runtime and Class Library – Managed Components in .NET – Web Services - Language Independence in the .NET Frame Work – **Working with ASP.NET: -** The Features of ASP.NET – The Anatomy of ASP.NET Pages – Introducing Web Forms – VS.NET Web Applications and other IDE Basics – Separating Content and Code-the Code-Behind Feature-Application Configuration.

## Unit – 2: HTML Controls (12 Hours.)

Using HTML Controls – Using Web Controls – Web Controls for Displaying and Formatting Data – Web Control for Creating Buttons – Web Controls for Inputting Text – Web Control for Selecting Choices – Web Controls for Creating Lists – Miscellaneous Basic Controls – Creating a Simple ASP.NET Application – ASP.NET Page Directives.

## Unit – 3: ASP.NET (12 Hours.)

ASP.NET Rich Controls - Validation Controls – Data List Controls – User Controls – ASP.NET Intrinsic Objects.

## Unit – 4: .NET Framework Class Library (12 Hours.)

Common Features of the .NET Framework Class Library – Using Data Collections – Handling File Input/Output and Directories – Using the Windows Events Log – Manipulating XML Data - Sending Internal E-mail.

## Unit – 5: ADO .NET (12 Hours.)

**Accessing Data with ADO .NET:** Overview of Data access on the Web – ADO.NET: The Next Generation of Data Access – ADO.NET Programming Objects and Architecture – Working with Datasets and Data Table Objects – Maintaining Data Integrity with the Data Relation Classes.

## Book for Study:

Matt J. Crouch ***"ASP.NET and VB.NET Web Programming"***, Pearson Education. 2010.

## Book for Reference:

Matthew Mac Donald, ***"ASP.NET: -The Complete Reference"***, TMH, New Delhi, 2002.

# MICROPROCESSOR AND ITS APPLICATIONS

**SEMESTER: IV** **COURSE CODE: U16IG17**
**CREDITS : 4** **HOURS/WEEK: 4**

***Objective:***

- *To provide familiarity with the structure, architecture, working and applications of microprocessors.*

## Unit – I: Introduction (12 Hours)

Word Length – Evolution of Microprocessors and Digital Computers – Computer Generations – Single Chip Microcomputers – Embedded Microprocessors – Hardware, Software and Firmware – CPU – Memory – Busses – Processing Speed – Classification of Computers – **Microprocessor Architecture: -** Introduction – Intel 8085 – Instruction Cycle – Timing Diagram.

## Unit – II: Instruction Set of Intel 8085 (12 Hours)

Introduction – Instruction and Data Formats – Addressing Modes – Status Flags – Symbols and Abbreviations – Intel 8085 Instructions – **Assembly Language Programs: -** Introduction – Addition and Subtraction (8 and 16-bits) – Decimal Addition and Subtraction – One's and Two's Complements (8 and 16) – Shifting and Masking – Largest and Smallest Numbers – Ascending and Descending Order – Sum of a Series – Multiplication and Division – Multi-byte Addition and Subtraction – Square-Root of a number – Block Transfer

## Unit – III: Peripheral Devices and their Interfacing (12 Hours)

Introduction – Address Space Partitioning – Memory and I/O Interfacing – Data Transfer Schemes – Interrupts of Intel 8085 – Interfacing Devices and I/O Devices – I/O Ports – Programmable DMA Controller – Programmable Interrupt Controller – Programmable Communication Interface – Programmable Counter/Interval Timer.

## Unit – IV: Microprocessor Applications (12 Hours)

Introduction – Delay subroutines – 7 Segment LED Display – Frequency Measurement – Measurement of Voltage and Current – Resistance Measurement – Temperature Measurement and Control – Water Level Indicator – Traffic Control.

## Unit – V: Other Microprocessors (12 Hours)

Introduction – Intel 8086 – Intel 8088 – Intel 80286 – Intel 80386 – Intel 80486 – Intel Pentium – Intel i860 – Zilog (Z80, Z8000)- Motorola (MC6800, MC6809, MC68000, MC68010, MC68012, MC68020, MC68030, MC68040, MC88100).

## Book for Study

B Ram, "Fundamentals of Microprocessors and Microcomputers", 5th Revised and Enlarged Edition, Dhanpat Rai Publications (P) Ltd., New Delhi, 2003.

# PROFESSIONAL ETHICS AND CYBER LAWS

**SEMESTER: IV** **COURSE CODE: U16IG18**
**CREDITS : 2** **HOURS/WEEK: 2**

***Objectives:***

- *To create awareness on Professional Ethics and Human Values, to handle ethical dilemma while discharging duties in professional life, to appreciate the rights of others and to provide understanding on Cyber laws and their implications.*

## Unit-I: Human Values (6 Hours)

Morals, Values and Ethics – Integrity – Work Ethic – Honesty – Courage –Empathy – Self-Confidence - Computer Professional as expert witnesses and advisors -moral leadership; - Respect for Others – Courage - Valuing Time – Co-operation – Commitment –Character – Spirituality.

## Unit-II: Cyber Law (6 Hours)

Cyber Law: International Perspective Section-**A**: Electronic Data Interchange 1) EDI: Concept and legal Issues. 2) UNCITRAL Model Law. 3) Electronic Signature Laws of Major Countries 4) Cryptography Laws 5) Cyber Laws of Major Countries- **Section–B:** Law of Intellectual Property-1) Copy Right Act. 2) Trade and Merchandise Act 3) Patent Act 4) Domain Name Disputes 5) Cyber-Squatting 6) Important Case Laws.

## Unit –III: Cyber Security (6 Hours)

**Cyber Security** - Introduction to Cyber Security, Implementing Hardware Based Security, Software Based Firewalls, Security Standards, Assessing Threat Levels, Forming an Incident Response Team, Reporting Cyber crime, Operating System Attacks, Application Attacks, Reverse Engineering & Cracking Techniques and Financial Frauds

## Unit –IV: Cyber Crimes & Legal Framework (6 Hours)

Module IV: Cyber Crimes & Legal Framework Cyber Crimes against Individuals, Institution and State• Hacking - Digital Forgery - Cyber Stalking/Harassment - Cyber Pornography - Identity Theft & Fraud - Cyber terrorism - Cyber Defamation - Different offences under IT Act, 2000. – Technology - Need for Cyber Law - Cyber Jurisprudence at International and Indian Level

## Unit –V: Cyber Law (6 Hours)

Module II: Cyber Law - International Perspectives UN & International Telecommunication Union (ITU) Initiatives Council of Europe-Budapest Convention on Cybercrime-Asia-Pacific Economic Cooperation (APEC) - Organization for Economic Co-operation and Development (OECD) World Bank Commonwealth of Nations

## Books for Study:


1. John R Boatright, "Ethics and the Conduct of Business", Pearson Education, New Delhi, 2003.
2. Edmund G Seebauer and Robert L Barry, "Fundamentals of Ethics for Scientists and Engineers", Oxford University Press, Oxford, 2001.


## Books for Reference:


1. Kamlesh N. & Murali D. Tiwari(Ed), IT and Indian Legal System, Macmillan India Ltd, New Delhi
2. K.L.James, The Internet: A User's Guide (2003), Prentice Hall of India, New Delhi
3. Chris Reed, Internet Law-Text and Materials, 2nd Edn, 2005, Universal Law Publishing Co., New Delhi
4. Vakul Sharma, Hand book of Cyber Laws, Macmillan India Ltd, New Delhi
5. S.V.Joga Rao, Computer Contract & IT Laws (in 2 Volumes), 2005 Prolific Law Publications, New Delhi
6. T.Ramappa, Legal Issues in Electronic Commerce, Macmillan India Ltd, New Delhi
7. Indian Law Institute, Legal Dimensions of Cyber Space, New Delhi
8. Pankaj Jain & Sangeet Rai Pandey, Copyright and Trademark Laws relating to Computers, Eastern Book Co, New Delhi
9. Farouq Ahmed, Cyber Law in India
10. S. V. Joga Rao, Law of Cyber Crimes and Information Technology Law, 200 Wadhwa & Co, Nagpur

# DATA STRUCTURE AND ALGORITHMS LAB

**SEMESTER: IV** **COURSE CODE: U16IP12**
**CREDITS : 4** **HOURS/WEEK: 5**

**Objectives:**

- *To provide programming experience in handling commonly used Data Structures and Algorithms.*

1. Single Dimensional Array
2. Multi-Dimensional Array
3. Queue Operations.
4. Stack Operation
5. Single Linked List
6. Doubly Linked Lists.
7. Tree Traversals.
8. Heap Sort
9. Quick Sort.
10. Merge Sort.
11. Bubble Sort
12. Selection Sort
13. Linear search.
14. Binary search.
15. Knapsack Algorithm
16. Spanning Tree Algorithm
17. Single Source Shortest Path Algorithm

# .NET PROGRAMMING LAB

**SEMESTER: IV** **COURSE CODE: U16IP13**
**CREDITS : 4** **HOURS/WEEK: 5**

***Objective :***

- *To provide hands on experience in writing server side programs using ASP.NET*

1. Design ASP.NET Web form using Web Server controls to enter job seeker's details.

2. Create an ASP.NET Web form using web control to enter Email Registration form.

3. Apply appropriate validation techniques in email registration form using validation controls.

4. Write an ASP.NET application to retrieve form data & display it in the client browser in table format.

5. Create a Web application to store the details of the books available for sale in XML format.

6. Create a Web application using ADO.Net that uses which performs basic data manipulations: (i)Insertion (ii) Updating (iii) Deletion (iv)Selection

7. Create an application using Data grid control to access information's form table in SQL Server.

8. Create a login form using Mobile Control.

9. Write an ASP.NET application for registering in on-line course of Bharathidasan University.

10. Develop a Portal for our College.

11. Display a "HELLO" message using Web Services.

# WEB PROGRAMMING LAB

**SEMESTER: IV** **COURSE CODE: U16IP14**
**CREDITS : 4** **HOURS/WEEK: 5**

***Objective**:*

- *To provides hands on training in programming for the world wide web.*

1. Create Web Pages for I. T. Department using features in HTML.
2. Create Web Pages for a travel agency using frames, tables and lists.
3. Create Web Pages to display the menu card of a hotel using style sheets.
4. Create Web Pages using forms for College Students Admission Process. (Use list box, Push button, Radio button, Command Button, Rich text box, text box, etc where ever applicable).
5. Create a Registration Form using Java Script. Apply appropriate data validations.
6. Write a program using Java Script to display the calculator in a web page.
7. Create web pages using Java Script to display the product details of a vehicle dealer for a given date and time. Use necessary controls where ever applicable.

**B. Voc. [Information Technology]**
**SEMESTER – V (NSQF Level : 7)**

# MOBILE COMPUTING TECHNOLOGIES

**SEMESTER: V** **COURSE CODE: U16IP14**
**CREDITS : 4** **HOURS/WEEK: 5**

***Objective:***

- *To impart knowledge on application development for Mobile Computing systems.*

## Unit – 1: Basics of Communication Technologies (12 Hours.)

Types of Telecommunication Networks – Components of a Wireless Communication System – Architecture of Mobile Telecommunication Systems – Wireless Networking Standards – WLAN – Bluetooth Technology – **Introduction to Mobile Computing and Wireless Networking :** Mobile Computing – Mobile Computing Vs. Wireless Networking – Characteristics of Mobile Computing - Structure of Mobile Computing Applications – Cellular Mobile Communication – GSM – GPRS - UMTS – **MAC Protocols :** Properties – Issues – Taxonomy –Assignment Schemes – MAC Protocols for Ad Hoc Networks.

## Unit – 2: Mobile Internet Protocol (12 Hours.)

Mobile IP – Packet Delivery – Overview – Desirable Features – Key Mechanism – Route Optimization – DHCP - **Mobile Transport Layer :** Overview of TCP/IP –Terminologies – Architecture – Operations – Application Layer Protocols of TCP – Adaptation of TCP Window – Improvement in TCP Performance – - **Operating Systems for Mobile Computing :** Mobile OS Responsibilities – Basic Concepts – Special Constraints and Requirements – Commercial Mobile OSs – Comparative Study of Mobile OSs – OS for Sensor Networks – Mobile Application Development Protocols : - Mobile Devices as Web Clients – WAP – J2ME – Android SDK.

## Unit – 3: Mobile Ad Hoc Networks (14 Hours.)

Basic concepts – Characteristics – Applications – Design Issues – Routing – Traditional Routing Protocols – Basic concepts of Routing – Popular MANET Routing Protocols – Vehicular Ad Hoc Networks (VANETs) – MANETs Vs. VANETs – Security Issues – Security Attacks on Ad Hoc Networks – **Wireless Sensor Networks (WSNs) :** Introduction – WSN versus MANET – Applications – Architecture of the Sensor Node – Challenges in the Design of an effective DSN – Characteristics of Sensor Networks – WSN Routing Protocols

## Unit – 4: Getting Started with Android (12 Hours.)

Activities, Fragments and Intents – Android User Interface – Designing User Interface with views – Displaying Pictures and Menus with Views – Data Persistence.

## Unit – 5: Content Providers (10 Hours.)

Messaging – Location Based Services – Networking – Developing Android Services – Publishing Android Applications.

## Books for Study:


1. Prasant Kumar Pattnaik, Rajib Mall, "Fundamentals of Mobile Computing", PHI Learning
2. Wei Meng Lee, "Beginning Android 4 Application Development", Wiley India Pvt. Ltd.., 2012.


## Books for Reference:


1. Ashok K Talukder, Hasan Ahmed, Roopa R Yavagal, "Mobile Computing", 2nd Edition, Tata McGraw Hill Publishing Company Limited, 2010.
2. Jochen Schiller, "Mobile Comunications", Pearsons Education, 2008.
3. Reto Meir, "Professional Android 4 Application Development", Wiley India Pvt. Ltd., 2012
4. Pradeep Kotari, "Android Application Development Black Book", Dreamtech Press, 2014.

# PROGRAMMING WITH PHP AND MYSQL

**SEMESTER: V** **COURSE CODE: U16IG20**
**CREDITS : 4** **HOURS/WEEK: 5**

***Objectives:***

- *To impart experience in Client and Server side Web Programming with PHP & MySQL.*

**UNIT – I: Introduction to PHP (12 Hours)**
Introduction to Dynamic Web Content-Constants-Variables-Types-Operators-Expressions and control flow statements-Type conversion.

**UNIT – II: Functions (12 Hours)**
Objects and Arrays: Functions – Including Files-Arrays-Multidimensional arrays- Array Functions – String – printf- Regular expressions – Date and time functions- Numbers – Files – XHTML.

**UNIT - III : Object Oriented Programming with PHP5 (12 Hours)**
Classes – Objects – methods – Constructors – Destructors – Cloning – Inheritance – Exceptions – Inheritance – Polymorphism – Hint- Abstract classes – Interfaces

**UNIT – IV: Accessing MySQL using PHP (12 Hours)**
Accessing MySQL using PHP and Form Handling: Querying MySQL database with PHP-Creating, describing, dropping a table- Adding, retrieving, updating, deleting data-Using auto increment-Building forms – Form elements – Cookies and Sessions.

**UNIT – V: JavaScript Validation and Error handling (12 Hours)**
Variables – Operators – DOM – Expressions – Control flow statements – Functions –Objects-Arrays – Validating user inputs – Regular expressions – Redisplaying forms after validation – AJAX – Designing dynamic websites

## Book for Study:

1. Learning PHP, MySQL and JavaScript by Robin Nixon, O'reilly Publishers , 2009

## Books for Reference:

1. Web Database Applications with PHP and MySQL by Huge E Williams and David Lane, O'reilly Publishers, 2007.

# PRINCIPLES OF MARKETING

**SEMESTER: V** **COURSE CODE: U16IG21**
**CREDITS : 2** **HOURS/WEEK: 5**

***Objectives:***

- *To make the students understand the basic principles of Marketing to make effective managerial decisions.*

## Unit-I: Marketing function (9 Hours)

Marketing function, the marketing concept, Marketing management system, Objectives and its interfaces with other functions in the organization.

## Unit-II: Marketing Environment (9 Hours)

Demographic, Economic, Physical, Technological, Political- marketing segmentation, targeting and positioning.

## Unit-III: Consumer markets (9 Hours)

Consumer markets and buying behaviour- (terms).

## Unit -IV: Concept of Marketing (9 Hours)

Concept of Marketing Mix. Four P's of Marketing, Marketing Strategies – Concept of Product Life Cycle- New Product Development Process – Pricing Decisions.

## Unit -V: Service marketing (9 Hours)

Introduction to service marketing: Types of service – Difference between goods & service – problems in service, Bank, Insurance, Bpo – Handling complaints – Quality of service.

## Books for Study:

1. Rajan Nair, Rajan Saxena, "Marketing Management"
2. Philip Kotler, "Marketing Management", Prentice Hall Of India.

## Books for Reference:

1. Ramasamy, Namakumari, "Marketing management"
2. William J Stanton, Michael J Etzel, Bruce J Walker, "Fundamentals of Marketing" McGraw Hill, International Edition.

# SOFTWARE ENGINEERING

**SEMESTER: V** **COURSE CODE: U16IG5:1**
**CREDITS : 3** **HOURS/WEEK: 3**

**Objective:**

- *To provide exposure on the principles and practices used in Software Development.*

## Unit – 1: Need for S/w Engineering **(9 Hours.)**

Need for S/w engineering – About software and S/w engineering – A systems approach, - Engineering approach – Members of the development team – Change in S/w engineering. - Modeling the process and Life cycle: The meaning of process – S/w process models – Tools and techniques for processional modeling – Practical process modeling.

## Unit – 2: Planning and managing the project **(9 Hours.)**

Tracking progress – Project personnel – Effort estimation – Risk management – The project plan – Process models and project management.

## Unit – 3: The requirement process **(9 Hours.)**

Capturing the requirements: The requirement process – Types of Requirements – Characteristics of requirements – Expressing requirements – Additional requirements notations – Prototyping requirements – Requirements Documentation – Participants in the requirements process – Requirements validation – Measuring requirements – Choosing a requirements specification Techniques.

## Unit – 4: Designing the system **(9 Hours.)**

Designing the system: Design Introduction – Decomposition and Modularity – Architectural styles and strategies – Characteristics of good design – Techniques for improving design – Design evaluation and validation – Documenting the design – Programming standards and procedures – Programming guidelines – Documentation.

## Unit – 5: Testing Strategies **(9 Hours.)**

Testing strategic issues – Test strategies for conventional S/w – Test strategies for object-oriented S/w – Validation testing – system testing – S/w testing. Fundamentals – Black-box and White-box testing – White box testing – Black box testing – Mccall's Quality factors – ISO 9126 - QF – S/w Engineering – S/w Maintenance – A S/w engineering process model.

## Books for Study :

**1.** Shari Lawrence P. Fleeger, *"**Software Engineering Theory and Practice",*** 2nd Edition, Pearson Education, Delhi, 2001. **[(for Units 1–4) Chapters 1, 2, 3, 4, 5, 7]**

**2.** Roger S. Pressman, *"**Software Engineering A Practitioner's Approach"***, 6th Edition, Tata McGraw Hill Publication, **[(for Unit 5) Chapters : 13, 14, 15, 31]**

## Books for Reference :

1. Ian Sommerville, ***"Software Engineering",*** 6th Edition, Pearson Education, Delhi, 2005.

Douglas Bell, ***"Software Engineering for Students-A Programming Approach"***, 4th Edition, Pearson Education, Delhi 2007.

# SOFTWARE PROJECT MANAGEMENT

**SEMESTER: V** **COURSE CODE: U16IG5:2**
**CREDITS : 3** **HOURS/WEEK: 3**

**Objectives:**

- *To impart knowledge on the basics of Software Project Management, responsibilities of Software Project Manager and Risk Management.*

**Unit - 1: Introduction to Software Project Management (9 Hours)**

Project Definition – Contract Management – Activities Covered by Software Project Management – Overview of Project Planning – Stepwise Project Planning.

**Unit - 2: Project Evaluation (9 Hours)**

Strategic Assessment – Technical Assessment – Cost Benefit Analysis–Cash Flow Forecasting – Cost Benefit Evaluation Techniques – Risk Evaluation.

**Unit - 3:Activity Planning (9 Hours)**

Objectives – Project Schedule – Sequencing and Scheduling Activities –Network Planning Models – Forward Pass – Backward Pass – Activity Float – Shortening Project Duration – Activity on Arrow Networks – Risk Management – Nature of Risk – Types of Risk – Managing Risk – Hazard Identification – Hazard Analysis – Risk Planning and Control.

**Unit:4: Monitoring and Control (9 Hours)**

Creating Framework – Collecting The Data – Visualizing Progress – Cost Monitoring – Earned Value – Prioritizing Monitoring – Getting Project Back To Target – Change Control – Managing Contracts – Introduction – Types Of Contract – Stages In Contract Placement – Typical Terms Of A Contract – Contract Management – Acceptance.

**Unit:5: Organizational Behaviour (9 Hours)**

Introduction – Understanding Behavior – Organizational Behaviour: A Background – Selecting The Right Person For The Job – Instruction In The Best Methods – Motivation – The Oldman – Hackman Job Characteristics Model – Working In Groups – Becoming A Team –Decision Making – Leadership – Organizational Structures – Stress –Health And Safety – Case Studies.

## Book for Study

1. Bob Hughes, Mikecotterell, "Software Project Management", 3rd Edition, Tata McGraw Hill, 2004.

## Book for References

1. Royce, "Software Project Management", Pearson Education, 1999.
2. Jalote, "Software Project Management in Practice", Pearson Education, 2002.

# SOFTWARE TESTING

**SEMESTER: V** **COURSE CODE: U16IG5:3**
**CREDITS : 3** **HOURS/WEEK: 3**

**Objective:**

- *To provide exposure on the principles and practices used in Software Testing*

## Unit – 1: Software Development Life Cycle Models (9 Hours.)

Phases of Software Project – Quality, Quality Assurance and Quality control – Testing, Verification & Validation – Process Model – Life Cycle Models - **White Box Testing:** What is White Box Testing? – Static Testing – Structural Testing – Challenges - **Black Box Testing:** What is Black Box Testing? – Why Black Box Testing? – When to do Black Box Testing? – How to do Black Box Testing?

## Unit – 2: Integration Testing (9 Hours.)

What is Integration Testing? – Integration Testing as a Type of Testing – Integration Testing as a Phase of Testing – Scenario testing – Defect Bash - **System and Acceptance Testing:** Overview – Why System Testing? – Functional Vs Non-Functional Testing – Functional System Testing – Non-Functional Testing – Acceptance Testing – Summary of Testing Phases.

## Unit – 3: Performance Testing (9 Hours.)

Factors governing Performance Testing – Methodology for Performance Testing – Tools for Performance Testing – Process for Performance Testing - **Regression Testing:** – What is Regression Testing – Types of Regression Testing – When to do Regression Testing – How to do Regression Testing – Best Practices in Regression Testing.

## Unit – 4: Internationalization Testing (9 Hours.)

Primer – Test Phases – Enabling Testing – Locale Testing – Validation – Language Testing – Localization Testing – Tools – Challenges and Issues – **Ad hoc Testing: -** Overview – Buddy Testing – Pair Testing – Exploratory Testing – Iterative Testing – Agile and Extreme Testing – Defect Seeding – **Usability and Accessibility Testing: -** What is Usability Testing? – Approach – When to do Usability Testing? – How to Achieve Usability? – Quality Factors – Aesthetics Testing – Accessibility Testing – Tools – Lab Setup – Test Roles

## Unit – 5: Test Planning, Management, Execution and Reporting (9 Hours.)

Test Planning -Test Management – Test Process – Test Reporting – Best Practices - **Software Test Automation:** What is Test Automation – Terms used in Automation – Skills Needed for Automation – What to Automate, Scope of Automation – Design & Architecture for Automation – Generic Requirement for Test Tool Framework – Process model for Automation – Selecting a Test tool – Automation for Extreme Programming Model – Challenges in Automation.

## Book for Study :

1. Srinivasan Desikan, Gopalaswamy Ramesh, **Software Testing – Principle & Practices**, Pearson Education, New Delhi, 2006.

## Books for Reference :

1. Ron Patton, ***"Software Testing"***, 2nd Edition, Pearson Education, New Delhi, 2006.
2. William E. Perry, ***"Effective Methods for Software Testing"***, 3rd Ed., Wiley India, 2006.
3. Renu Rajani, Pradeep Oak, ***"Software Testing – Effective Methods, Tools and Techniques"***, TMH Publishing Company Limited, New Delhi, 2004.

**B. Voc. [Information Technology]**
**SEMESTER – V (NSQF Level : 7)**

# MOBILE APPLICATION DEVELOPMENT LAB

**SEMESTER: V** **COURSE CODE: U16ISP15**
**CREDITS : 6** **HOURS/WEEK: 5**

**Objectives:**

- *To provide hands-on experience in Mobile Application Development for Android operated devices.*

**1.** Create "Hello World" application. That will display "Hello World" in the middle of the screen in the red color with white background.

**2.** Create sample application with login module.(Check username and password)
On successful login, go to next screen, and on login fail, alert user using Toast (Message).
Also pass username to next screen

.

**3.** Create an application that will pass some number to the next screen, and on the next screen that number of items should be display in the list.

**4.** Create an application that changes the color of the screen, based on the selected options from the menu.

**5.** Create an application that will display toast(Message)

**6.** Create an application to make Insert, update, Delete and retrieve operation on the database.

**7.** Create an application that will play a media file from the memory card.

**8.** Create an application to call specific entered number by user in the EditText

**9.** Understanding of UI :

a. Create an UI such that , one screen have list of all the types of cars.
b. On selecting of any car name, next screen should show Car details like : name , launched date ,company name, images(using gallery) if available, show different colors in which it is available.

**10.** Create an application to take picture using native application.

# PHP AND MYSQL PROGRAMMING LAB

**SEMESTER: V** **COURSE CODE: U16ISP16**
**CREDITS : 6** **HOURS/WEEK: 5**

***Objectives:***

- *To provide hands on training in Web Programming with PHP & MySQL.*

1. Write a PHP program to compute the number of days in a month
2. Write a PHP program for sorting numbers
3. Write a PHP program for sorting names
4. Write a PHP function to reverse an integer and a string. Test these functions.
5. Write a PHP function to test given character is lower or upper case
6. Write a PHP program for word searching in a given text
7. Write a PHP program for Palindrom
8. Write a PHP program for Fibonacci series.
9. Write a PHP program to test 10 string functions
10. Write a PHP program to maintain student records using files
11. Write a PHP program using forms to display Employee records stored in MySQL

# SHAREPOINT TECHNOLOGIES

**SEMESTER: VI** **COURSE CODE: U16IG22**
**CREDITS : 4** **HOURS/WEEK: 5**

**Objectives:**

- *SharePoint 2013 course is designed for IT students who wish to gain knowledge of using SharePoint in data center or cloud.*

## Unit -1: Introduction to SharePoint (15 Hours.)

**Getting to Know SharePoint:** Defining SharePoint by Function - Defining SharePoint by User - Introducing the User Interface - Introducing the Structure – **Addressing the needs of the developer:** Extending SharePoint 2013 – Breaking It Down for Developers - **SharePoint 2013: The Platform:** SharePoint Installation Types - SharePoint 2013 Capabilities - Site Collections and Sites - SharePoint 2013 APIs - **SharePoint Central Administration. Overview of the SharePoint 2013 App Model:** SharePoint 2013 App Model – Moving to the Cloud – Understanding the three Apps for SharePoint Deployment Models.

## Unit – 2: Developer Tooling for SharePoint (13 Hours.)

SharePoint Development Across Developer Segments –Web-Based Development in SharePoint - Site Settings - Developing SharePoint Applications Using SharePoint Designer - Developing SharePoint Applications Using Visual Studio 2012 - Other Tools for SharePoint Development. **Understanding your Development Options:** Application and Solution Types - Common Developer Tasks.

## Unit – 3: Overview of Windows Azure (10 Hours.)

Defining the Cloud – Defining Windows Azure – Windows Azure Platform. **Developing, Integrating, and Building Applications in SharePoint 2013:** Development Models Available in SharePoint 2013 - Application Integration Options in SharePoint 2013. **Packaging and Deploying SharePoint 2013 Apps:** Anatomy of an App - Packaging and Publishing an App - Deploying an App.

## Unit – 4: Overview of the Client-Side Object Model and REST APIs (12 Hours.)

Introducing Remote APIs in SharePoint 2013 - Client-Side Object Model (CSOM) Basics - Managed Code (.NET) – JavaScript - Windows Phone - REST and OData - Client-Side Object Model API Coverage.

## Unit – 5: Developing Workflow Applications (10 Hours.)

Introducing Workflow Manager - The Big New Features for SharePoint Designer - Visio Professional, SharePoint Designer, and Workflow - Workflow and Visual Studio - Workflow in Apps for SharePoint.

## Books for Study:

1. Steve Fox, Chris Johnson and Donovan Follette, *"**Beginning SharePoint 2013 Development**"*, John Wiley & Sons, Inc., Indianapolis, IN 46256.

## Book for Reference:

1. Darvish Shadravan, Penelope Coventry, Thomas Resing, Christina Wheeler, *"**Microsoft SharePoint 2013 Inside Out",*** published with the authorization of Microsoft Corporation by: O'Reilly Media, Inc.

# INFORMATION SECURITY

**SEMESTER: VI** **COURSE CODE: U16IG23**
**CREDITS : 6** **HOURS/WEEK: 6**

**Objective:**

- *To provide understanding on Internet based Information Security Systems.*

## Unit 1: Need for Security (9 Hours.)

Need for Security – Security Approaches – Principles of Security – Types of Attacks – **Cryptography: -** Introduction – Plain Text and Cipher Text – Substitution Techniques – Transposition Techniques – Encryption and Decryption – Symmetric and Asymmetric Cryptography – Steganography

## Unit 2: Symmetric Key Algorithms (9 Hours.)

Algorithm Types and Modes – An Overview – DES – IDEA – RC4 – RC5 – Blowfish – AES – **Asymmetric Key Algorithms**: - An Overview – RSA Algorithm – Symmetric and Asymmetric Key Cryptography Together.

## Unit 3: Digital Signatures (9 Hours.)

Introduction – Message Digests – MD5 – SHA – SHA-512 – Message Authentication Code – HMAC - Digital Signature Techniques – **Digital Certificates and Public Key Infra Structure: -** Digital Certificates – Public Key Management – The PKIX model – Public Key Cryptography Standards

## Unit 4: Internet Security Protocols (9 Hours.)

Basic Concepts – SSL - TLS – SHTTP – TSP – Secure Electronic Transactions (SET)– Electronic Money – Email Security – WAP Security – GSM Security – **User Authentication and Kerberos: -** Authentication Basics – Passwords – Authentication Tokens – Certificate Based Authentication – Biometric Authentication – Kerberos – Key Distribution Centre – Security Handshake Pitfalls – Single Sign On Approaches.

## Unit 5: Cryptography in JAVA, .NET and OS (9 Hours.)

Cryptographic Solution in Java – Microsoft .NET Framework – Cryptographic Toolkits – Security and OS – Database Security – **Network Security, Firewalls and VPN: -** Firewalls – IP Security – Virtual Private Networks – Intrusion.

## Book for Study:


1. Atul Kahate, ***"Cryptography and Network Security"***, 2nd Edition, 6th Reprint, TMH Publications, New Delhi, 2009.


## Book for Reference:


1. William Stallings, **"*Cryptography and Network Security: Principles and Practices"***, Fourth Edition, Pearson Education, 2005.
2. Charlie kaufman, Radia Perlman, Mike Speciner, ***"Network Security – Private Communication in a Public World"***, 2nd Edition, PHI Publications, 2002.

# ENTREPRENEURIAL DEVELOPMENT

**SEMESTER: VI** **COURSE CODE: U16IG24**
**CREDITS : 2** **HOURS/WEEK: 3**

***Objectives:***

- *To provide information and exposure on developing Entrepreneurial Skills*

**Unit – I: Definition of Entrepreneur (6 Hours)**

Importance of Entrepreneurship in underdeveloped economics – Constraints in such countries to Entrepreneurship – Sociological and psychological factors of Entrepreneurship Achievement, motivation and methods of improving a person.

**Unit – II: Why and how to be a entrepreneur (6 Hours)**

Factors to be considered when selecting a project and its location – Technical feasibility, Market feasibility, Importance of market survey and how to do it.

**Unit – III: Economic feasibility (6 Hours)**

Planning the project – Essentials of a project report of a business – Counseling facilities available for technical training and project formulation. Choosing the scale of business.

**Unit – IV: Managerial skills (6 Hours)**

Managerial skills required by entrepreneurs and methods of acquiring them – Role of management consultant in India – Different types of credit required by a firm, seed capital, venture capital, fixed capital, working capital, packing and export credit, and sources of these. Benefits of leasing.

**Unit – V: Problems faced by rural women entrepreneurs (6 Hours)**

Emerging Trend – SHG's and KVIC's suitable for handicapped persons – Problems of family business – Prevention of Industrial pollution of air and water around the business unit – causes and prevention of industrial sickness, Emerging trends in IT industry, BPO's / ITES/STP's.

## Books for Study and Reference:


1. Vasanth Desai, Dynamics of Entrepreneurial Development
2. S B Srivastavan, A practical guide to Industrial Entrepreneur, Sultan Chand & Sons
3. Gupta, Srinivasan, Entrepreneur Development
4. P Saravanavel, "Entrepreneurship Development Principles, Policies and Programmes".
5. T V Rao and Udia Pareek, "Learning Developing Entrepreneurship: A handbook Systems"

# WEB SERVICE TECHNOLOGIES

**SEMESTER: VI** **COURSE CODE: U16IG:4**
**CREDITS : 3** **HOURS/WEEK: 3**

***Objective:***

- *To impart knowledge on the concepts and applications associated with Web Services.*

**Unit – 1: Introduction (9 Hours.)**

Overview of web services - SOAP WSDL UDDI – Importance of Web Services – Web services and enterprises – **XML Fundamentals: -** Overview of XML – XML Documents – XML Namespaces – XML Schema – Processing XML.

**Unit – 2: SOAP and WSDL (9 Hours.)**

Overview of SOAP – SOAP Messages – SOAP Encoding – SPOAP RPC – Using Alternate SOAP Encodings – Document, RPC, Literal, Encoded – SOAP Web Services and the REST Architecture – WSDL – Using SOAP and WSDL – **UDDI: -** Overview of UDDI – UDDI Business Registry – UDDI under the covers – Accessing UDDI – How UDDI is Playing Out.

**Unit – 3: Conversations (9 Hours.)**

Overview–Web Services Conversation Language–WSCL Interface Components– Relationship Between WSCL and WSDL–**Workflow: -**Business Process Management–Workflows and Workflow Management System – Business Processing Language for Web Services (BPEL)

**Unit – 4: Transactions (9 Hours.)**

ACID Transactions – Distributed Transactions and Two-Phase Commit – Dealing with Heuristic Outcomes – Scaling Transactions to Web Services – Other Web Service Transaction Protocols – **Security: -** Web Services Security Roadmap – WS-Security.

**Unit – 5: Real World Web Service Application (9 Hours.)**

**Development-Foundations: -** Enterprise Procurement – System Functionality and Architecture – Running the EPS Application – System Implementation - **Real World Web Service Application Development-Advanced Technologies: -** Introduction – Building Evolvable and Composite Workflows – Adding Transaction Support.

**Book for Study:**

1. Sandeep Chatterjee, James Webber, "Developing Enterprise Web Services – An Architect's Guide", Pearson Education, 2004.

**Book for Reference:**

1. Frank. P. Coyle, "XML, Web Services And The Data Revolution", Pearson Education, 2002.

# USER EXPERIENCE DESIGN PRINCIPLES

**SEMESTER: VI** **COURSE CODE: U16IG6:5**
**CREDITS : 3** **HOURS/WEEK: 3**

**Objectives:**

- *To provide exposure on the application of design learning to real-life situations, where communication and collaboration are vital.*

## Unit -1: The Tao of UXD (9 Hours.)

What Is User Experience Design – About UX Designers – Where UX Designers Live? **The Project Ecosystem:** Identify the Type of Site - Choose Your Hats. **Proposals for Consultants and Freelancers:** Proposals - Creating the Proposal - Statements of Work. **Project Objectives and Approach:** Solidify Project Objectives - Understand the Project Approach.

## Unit – 2: User Research (9 Hours.)

Choosing Research Techniques. **Site Maps and Task Flows**: What Is a Site Map? - What Is a Task Flow? - Tools of the Trade - Basic Elements of Site Maps and Task Flows - Common Mistakes - Advanced Site Maps - Breaking the Site Map Mold - Task Flows - Taking Task Flows to the Next Level. **Wireframes and Annotations:** What Is a Wireframe? - What Are Annotations? - Who Uses Wireframes? - Start Simply: Design a Basic Wireframe. **Prototyping:** What Is Prototyping? - How Much Prototype Do I Need? - Paper Prototyping - Digital Prototyping - Prototype Examples.

## Unit – 3: Organizing the Content (9 Hours.)

**Information Architecture and Application Structure:** The Big Picture - The Patterns. **Getting Around: Navigation, Signposts, and Wayfinding:** Staying Found - The Cost of Navigation - Navigational Models - Design Conventions for Websites - The Patterns. **Organizing the Page: Layout of Page Elements:** The Basics of Page Layout - The Patterns.

## Unit – 4: Pushing the Boundaries (9 Hours.)

**Doing Things: Actions and Commands:** Pushing the Boundaries - The Patterns. **Showing Complex Data: Trees, Charts, and Other Information Graphics:** The Basics of Information Graphics - The Patterns. **Getting Input from Users: Forms and Controls:** The Basics of Form Design - Control Choice - The Patterns.

## Unit – 5: Using Social Media (9 Hours.)

The Basics of Social Media - The Patterns. **Going Mobile**: The Challenges of Mobile Design -The Patterns. **Making It Look Good: Visual Style and Aesthetics:** The Basics of Visual Design - What This Means for Desktop Applications - The Patterns.

## Books for Study:


1. Russ Unger and Carolyn Chandler, *"**A Project Guide to UX Design - For user experience designers in the field or in the making**"*, New Riders is an imprint of Peachpit, a division of Pearson Education, 2009 Edition. (For Units – 1 and 2)
2. Jenifer Tidwell, *"**Designing Interfaces**"*, Second Edition, Published by O'Reilly Media. (For Units – 3, 4 and 5)

# HUMAN COMPUTER INTERACTION

**SEMESTER: VI** **COURSE CODE: U16IG6:6**
**CREDITS : 3** **HOURS/WEEK: 3**

***Objectives:***

- *To provide a vivid understanding on the facilities and technologies available for interaction between Human Beings and Computers.*

## Unit – 1: Models, Theories, and Frameworks **(9 Hours.)**

A Effective Use and Reuse of HCI Knowledge – Macrotheory for System of Interactors – Design in the MoRAS – Distributed Cognition : Toward a New Foundation for Human-Computer Interaction Research. – **User Interface Software and Tools :** - Past, Present, and Future of User Interface Software Tools – Creating Creativity : User Interfaces for Supporting Innovations – Interaction Spaces for Twenty-First-Century Computing.

## Unit – 2: Usability Engineering Methods and Concepts **(9 Hours.)**

The Strategic Use of Complex Computer Systems – User Interface Evaluation : How Cognitive Models can Help – HCI in the Global Knowledge-Based Economy : Designing to Support Worker Adaptation – A Reference Task Agenda for HCI – The Maturation of HCI: Moving beyond Usability toward Holistic Interaction.

## Unit – 3: Groupware and Cooperative Activity **(9 Hours.)**

Computer-Mediated Communications for Group Support : Past and Future – The Intellectual Challenge of CSCW : The Gap between Social Requirements and Technical Feasibility – Social Translucence: Designing Systems That Support Social Processes – Transcending the Individual Human Mind : Creating Shared Understanding through collaborative Design – The Development of Cooperation: Five Years of Participatory Design in Virtual School – Distance Matters.

## Unit – 4: Media and Information **(9 Hours.)**

Designing the User Interface for Multimodal Speech and Pen-Based Gesture Applications: State-of-the-Art Systems and Future Research Directions – Technologies of Information : HCI and Digital Library – Interface that Give and Take Advice – Beyond Recommender Systems : Helping People Help Each Other.

## Unit – 5: **Integrating Computation and Real Environments** **(9 Hours.)**

Charting Past, Present, and Future Research in Ubiquitous Computing – Situated Computing : The Next Frontier for HCI Research – Roomware : Toward the Next Generation of Human – Computer Interaction based on an Integrated Design of Real and Virtual Worlds. – Emerging Framework for Tangible User Interfaces – **HCI and Society** : Learner-Centered Design : Reflections and New Directions – HCI Meets the "Real World" : Designing Technologies for Civic Sector Use – Beyond Blowing Together : Socio Technical Capital.

## Book for Study:

1. John M. Carroll, ***"Human Computer Interaction–in the New Millennium"***, Pearson Education, 2007.

## Book for Reference:

1. Alan Dix, Janet Finlay, Gregory D. Abowd, Russell Beale, ***"Human-Computer Interaction"***, Pearson Education, 2009.

# SHAREPOINT APPLICATIONS LAB

**SEMESTER: VI** **COURSE CODE: U16ISP17**
**CREDITS : 6** **HOURS/WEEK: 5**

## Objectives:

- *To enrich multi technical skills (UX, Script, Design, and Client object model and workflow solutions) in SharePoint.*

1. Create a SharePoint Team site and apply different themes.
2. Create a SharePoint site collection and set different permission levels and also create custom permissions.
3. Create a SharePoint List and customize the forms by using Content Editor and Script Editor Web parts (Use JavaScript, JQuery, and ECMAScript and CSS styles).
4. Create a SharePoint survey with custom design and options.
5. Create a SharePoint Task list and use SharePoint Designer workflow to send the alerts for the high priority tasks.
6. Create a SharePoint Document Library and send change alerts in 3 different ways.
7. Create a SharePoint Custom List and customize the views by applying filters, sorting and Total options. Also create a Datasheet view and apply formulas.
8. Create a SharePoint Custom List and use different formulas for different fields.
9. Import an Excel data to the SharePoint List and also sync two way.
10. Export a SharePoint List data to Excel and MS Access and synchronize the data.
11. Build a task form using SharePoint Designer/InfoPath.
12. Customize the master page and branding design.
13. Create custom search option for a List/Library using JavaScript/JQuery.
14. Create a cascading drop down functionality for the list fields.
15. Create Event receiver for a List using Client object model.
16. Create a custom workflow for an automated functionality/task.
17. Create a blog, add posts and pages, and editing a page.
18. Create a SharePoint Site and List template with content and use the same in different site.
19. Use SPServices and CAML query to read, update and delete the items in the List.

Create a workflow for Employee Time Card Approval with Visio and SharePoint Designer.

# INFORMATION SECURITY LAB

**SEMESTER: VI** **COURSE CODE: U16ISP18**
**CREDITS : 6** **HOURS/WEEK: 5**

1. Looking up internet address of a local host using Java Program
2. Looking up internet address of a remote host using Java Program
3. Java Program to find network ports using port scanner
4. Java Program to implement finger client
5. Java program to implement the ping programming
6. Implementation of peer to peer communication using UDP
7. Implementation of socket program for UDP Echo Client and Echo Server
8. Implementation of Client Server Communication Using TCP
9. Implementation of Client Server Application for chat
10. Java Program to implement multicast on a network
11. Java Program to implement Client Server Communication using object stream
12. Java Program to implement Client Server Communication using byte stream
13. Implementation of Cyclic Redundancy Check to detect errors
14. Java Program to perform Message passing using Message Window
15. Java Program to perform Message Passing using Group Window
16. Java Program to implement the Online test for a Single Client
17. Java Program to implement Caesar Cipher technique
18. Java Program to Implement the Monoalphabetic Cipher
19. Java Program to implement Transposition Cipher
20. Java Program to implement Substitution Cipher
21. Java Program to implement Product Cipher
22. Java Program to implement Diffie Hellman Key Exchange Algorithm
23. Java Program to implement RSA Algorithm
24. Java Program to implement basic One Time Password