

**LOYOLA COLLEGE (AUTONOMOUS)
DEPARTMENT OF COMPUTER SCIENCE
BACHELOR OF SCIENCE in COMPUTER SCIENCE
(Effective from the Academic year 2012 -2013 onwards)**

ELECTIVE GENERAL – 1

SEMESTER III

- 1. NUMERICAL METHODS AND C LANGUAGE**
- 2. CIPHER SECURITY AND CYBER LAWS**
- 3. COMPUTER FUNDAMENTALS AND OFFICE AUTOMATION**

ELECTIVE GENERAL – II

SEMESTER IV

- 1. WEB PROGRAMMING**
- 2. DESIGN AND ANIMATION THROUGH FLASH**
- 3. DATABASE MANAGEMENT SYSTEMS**

Semester: III
Category: EG

Credits: 1
No. of Hrs/week: 3

NUMERICAL METHODS AND C LANGUAGE

Objectives:

1. To understand the fundamentals of numerical methods.
2. Learn the basic concepts of programming and solve the numerical methods problems through C language

UNIT I

Interpolation : Newton's – Lagrange's interpolating polynomials.

Numerical Integration: Trapezoidal rule – Simpson's 1/3rd rule – Gauss-Legendre quadrature.

Numerical Differentiation: solution of first order differential equations – Euler's method – Runge-kutta method.

UNIT II

Solutions of equations: polynomial equations and determinations of roots – Regula falsi method – solution of simultaneous equations – Gauss Jordan elimination method.

Matrices: Jacobi's method of determining eigen values and eigen vectors of a real symmetric matrix.

Curve fitting: The linear law – weighted least squares – fitting straight line.

UNIT III

Basic concepts: introduction – constants – variables- data types- different types of operators – expressions – type conversions in expression – operator precedence – managing input and output operations.

UNIT IV

Control statements : IF statement – IF ELSE statement – nested IF statement – SWITCH and GOTO statements.

Looping control: WHILE statement – DO WHILE statement – FOR statement – BREAK and CONTINUE statements.

Arrays: one, two and multi dimensional arrays – initialization of arrays.

UNIT V

Handling of character strings: Declaration and initializing strings – reading and writing strings – concatenation – comparing of strings – string handling functions.

Functions: form of functions \ actual and formal arguments RETURN statement – calling a function – non integer functions – functions with arrays – local and global variables.

Text Books

- 1.E.Balakumarasamy, "Programming in ANSI C", Sixth Edition., Tata Mcgraw hill
- 2.Kuo, "Numerical Methods and Computers" ,Addison-wesely,London,1996

Reference Books

- 1.M.K.Venkataraman, 1999, Numerical Methods in Science and Engineering,5th edition,The National Publishing CO., Chennai.
- 2.B.Thiyagarajan, "C for you", MJP publishers,2010

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CYBER SECURITY AND CYBER LAWS

Objectives:

1. To provide the awareness of hacking and unauthorised accessing.
2. To give the basics of security in internet.
3. To give awareness of safe transactions through internet and cyber laws.

UNIT I

Introduction — Survey of malware — Protect your turf — Viruses - Worms — Trojan Horses — Bot Networks - Social Engineering - Avoiding Malware - Spyware - Adware - Keyboard Loggers - Rogue Software and Spyware - Ransomware - Current and Future Threats.

UNIT II

Hackers - IP Address - Hacker Tools - Computer Security Personnel (White Hats) - E-mail and SPAM - Spoofing - How Spammers work - Social Engineering - Keeping SPAM out of the Inbox - SPIM - Cyber Bullies - Online Reputation Attacks - Reputation Management - Protecting from Cyber-bullies.

UNIT III

Phishing - Recognizing a Phishing Trip - Online Shopping Basics - Shopping Problems - Ensuring Safe Shopping - Cookies - Choosing your browser - Understanding the plug-in predicament

UNIT IV

Introduction to IT laws & Cyber Crimes Laws, Investigation and Ethics: Cyber Crime, Information Security and Law, Types & overview of Cyber Crimes, Cyber Law Issues in E-Business Management. Overview of Indian IT Act, Ethical Issues in Intellectual property rights, Copy Right, Patents, Data privacy and protection, Domain Name, Software piracy.

UNIT V

Introduction to Cyber Crime Investigation, Cyber Forensics, Investigation Tools, eDiscovery, Digital Evidence Collection, Evidence Preservation, E-Mail Investigation, E-Mail Tracking, IP Tracking, E-Mail Recovery.

Text Books:

1. McCarthy Linda, Weldon-Siviy Denise, "Own Your Space - Keep Yourself and Your Stuff Safe Online, Microsoft press
2. Sood Vivek , "Cyber Laws Simplified", TataMcGrawHill,2001.

Reference Books:

1. Brown C. Bruce , 2011, " How to stop E-mail Spam, Spyware. Malware, Computer Viruses and Hackers from running your Computer or Network: The complete guide for your home and work", Atlantic Publishing group.
2. Yatindra Singh Justice, "Cyber Laws", Fourth edition,2011

Web References:

1. <http://www.microsoft.com/en-us/download/details.aspx?id=1522>
2. <http://www.iibf.org.in/documents/Cyber-Laws-chapter-in-Legal-Aspects-Book.pdf>
3. <http://www.asianlaws.org/library/cyber-laws/intro-indian-cyber-law.pdf>

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COMPUTER FUNDAMENTALS AND OFFICE AUTOMATION

Objectives::

1. To give the basics of computers and processing.
2. To give document editing and data manipulation and presentation through MS-Office tools including Ms-Word, Ms-Excel and Ms-Power point.
3. To know the features of internet and mailing.

UNIT I

Computer Fundamentals: Computer - History, Generations- Classification of Computers– – Number System.

UNIT II

MS-Office: Windows Operating System- Introduction to MS-Office – Word Processing and Microsoft Word.

UNIT III

Microsoft Excel: Understanding Basics- Menus- Creating Worksheet – Formulas- Functions-Creating Chart and Graph.

UNIT IV

Microsoft Power Point- Introduction to Power Point – Menus – Creating PowerPoint Presentation – Views- Formatting Text- Working with Charts- Making slide show.

UNIT V

Internet and Web Technology: Internet and World Wide Web – E-Mail-Introduction to HTML – Hyper linking Websites- Creating Frames and Tables.

Text Book:

Maidasani Dinesh ,”*Learning Computer Fundamentals, MS-Office and Internet and Web Technology*”, 2005 Firewall Media , 1st Edition,

Reference Books:

1. A Lexis Leon, Mathews Leon, A. Chitra, Suganthi Jeyaraj, “*Fundamentals of Computing , C Programming and MS-Office*”, Windom Publishing Pvt Ltd., Chennai, 2004.
2. Mansfield Richard,” *Working in Microsoft Office*”, 2001, Tata McGrawHill,

Semester: IV
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WEB PROGRAMMING

Objectives::

1. To learn the programming environment for the Internet
2. To that will gradually build a web site using HTML.
3. To create an interactive and validated web site using Java Script.

UNIT I

Internet Basics – Introduction to HTML: Web Server–Web client/browser- HTML-Commonly Used HTML Commands-Titles and Footers-Text Formatting – Emphasizing Material in a Web page-Text Styles-Other Text effects.

UNIT II

Lists – Adding Graphics to HTML documents. Tables – Linking Documents: Links - Images as Hyperlinks – Frames: Introduction to Frames.

UNIT III

Introduction to Java Script: Java Script in Web pages – Advantages-Writing Java Script into HTML-Basic Programming Techniques- Operators and Expressions – Programming Construct- Conditional Checking-Loops-Functions-User defined Functions-Placing text-Dialog boxes.

UNIT IV

Forms used by Web site: The form object-Other Built-in Objects in Java Script-User Defined objects-Cookies.

UNIT V

Dynamic HTML: Cascading Style Sheets-Class- Tag- External Style Sheets-Working with Java script style sheets-<DIV> tag-Layers.

Text Book:

Bayross Ivan, “*Web Enabled Commercial Application Development Using...HTML,DHTML Java Script, and PHP*”,BPB Publications, New Delhi,4th Edition, 2010.

Reference Books:

1. Jaworski(james), “*Mastering Java Script and script*” ,Bpb publications, New Delhi,1999.
2. Schafer(Steren M),HTML CSS Javascript part python and PHP web standards programmings Reference,Edition 1, 2005
3. Powell A. Thomas, “*The Complete Reference HTML & XHTML*”, Tata-Mc Graw Hill, Fourth Edition, 2003

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DESIGN AND ANIMATION THROUGH FLASH

Objectives::

1. To draw and manage pictures, changing the colors, animation and different tweening options.
2. To acquire skill in writing action scripts to automate the animation in easy steps.

UNIT I

What is Multimedia – The elements of Multimedia system – Using Multimedia: Benefits of using Multimedia – Problem with Multimedia – Technology: Converging technologies – Function and Subsystems – Multimedia platforms: Multimedia hardware – System software – Future Directions – Development Tools: Developing Applications – Commercial tools – Standards.

UNIT II

Storage for Multimedia: Choice of storage – Magnetic Media – Optical Media – Communications: Building Multimedia Networks – Local Area Networks – Wide Area Networks – Cable and Broadcast Communications – Applications: Multimedia in the real world – Multimedia on Networks – Training and Education – The Multimedia Office – Multimedia in the Home.

UNIT III

Understanding Flash – Basic Elements – Simple Animations – Flash toolbox – Using the tools – Flash Panels – Timeline – Layers – Drawing Objects – Lines of Fills, Colors – Rotating, Skewing and Scaling – Grouping Objects.

UNIT IV

Creating Animations – Tween Types – Motion Tween – Shape Tween – Guides and Masks – Working with Guides – Working with Masks – Symbols and Library – Working with Symbols – Working with Library – Working with Imported Graphics – Working with Sounds – Adding Sounds – Editing Sounds – Setting Sound Output Options.

UNIT V

Action Script Concepts – Action Script Basics – Data Types Basics – Action Script Programming –Applying Action Script – Control Actions – Control Properties.

Text Books:

1. Jeffcoate Judith , “Multimedia in Practice”, 2006 , Pearson Education,
2. Underdahl Brain, “Macromedia Flash MX – A Beginner’s Guide”, Dream Tech Press,

Reference Books:

1. Vaughan Tay, “Mutimedia: Making it work ” , McGrawhill, 8th Edition
2. Reinhardt Robert, Dowd Snow, 2006, “ Macromedia Flash 8 Bible”,John Wiley&Sons,

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DATABASE MANAGEMENT SYSTEMS

Objectives:

1. To know the fundamentals of Database systems and file systems.
2. To know the organization of data in cost effective manner
3. To experience the basic SQL functionalities

UNIT I

File management systems- Database management systems- Comparison of both-an overview of database management-brief introduction of structured query languages-Embedded SQL-Dynamic SQL

UNIT II

DBMS Models-The Hierarchical model-Network model-Relational model-Database system architecture. Relational database primer- Relational database characteristics-

UNIT III

Database integrity –keys-entity and referential integrity-views-Functional dependency- Normalisation- First normal form-Second normal form-Third normal form.

UNIT IV

creating –dropping and altering tables- DML operations-simple queries- operators- Sub queries joining tables.

UNIT V

Character functions-number functions-date functions –conversion functions- Group Functions-creating views- dropping and altering views creating indexes.

Text Books:

1. Atul Kahate, Introduction to Database Management Systems, Pearson education,2011
2. Nilesh Shah, “Database Systems Using Oracle A simplified Guide to SQL and PL/SQL”, Second edition, Prentice Hall of India, 2005.

Reference Books:

1. Raguramakrishnan , “Database Management Systems”, Tata McGraw Hill, Third Edition,2003.
2. Loney Kevin and Koch George ,“Oracle 9i The complete reference “, 2002. ,Tata McGraw Hill
