DIBRUGARH UNIVERSITY

Syllabus for FYUGP in Computer Science

(For Semesters I, II& III)

As approved in the meeting of the BoS held on

22.11.2022. and 09/02/2023

To be effective from the Session 2023-24

Course Preamble

The Bachelor of Computer Science program is designed to provide students with a comprehensive understanding of computer science and its various subfields. The program aims to equip students with the necessary skills to design, develop and maintain computer systems and software applications, and to prepare them for careers in the rapidly evolving field of computer science. The program focuses on developing problem-solving skills using computer programs, database management systems, computer networks, algorithms and data structures, cloud computing, artificial intelligence, and related areas. The program also emphasizes the development of communication, analytical, and critical thinking skills.

Introduction:

The Bachelor of Computer Science program is a four-year undergraduate program designed to provide students with a strong foundation in computer science. The program is structured to ensure that students develop a comprehensive understanding of the principles and practices of computer science and its various subfields. The program comprises of eight semesters, and students are allowed different exit points with the following certification/diploma/degree:

i. Students on exit after one year of the course shall be awarded Undergraduate Certificate (in Computer Science) after securing the requisite 44 Credits in Semesters I and II.

ii. Students on exit after second years of the course shall be awarded Undergraduate Diploma (in the Computer Science) after securing the requisite 88 Credits on completion of Semester IV.

iii. Students on exit after three years of the course shall be awarded Bachelor of (Computer Science) Honours (3 years) after securing the requisite 132 Credits on completion of Semester VI.

iv. Students on exit after four years of the course shall be awarded Bachelor of (Computer Science) (Honours with Research) (4 years) after securing the requisite 176 Credits on completion of Semester VIII**.**

Aim:

The aim of the Bachelor of Computer Science program is to provide students with a comprehensive understanding of computer science and its various subfields. The program aims to equip students with the necessary skills to design, develop and maintain computer systems and software applications, and to prepare them for careers in the rapidly evolving field of computer science. The program also aims to develop communication, analytical, and critical thinking skills.

Graduate Attributes:

Upon completion of the program, graduates will possess the following attributes:

- An in-depth understanding of computer science and its various subfields.
- The ability to design, develop, and maintain computer systems and software applications.
- Strong problem-solving and analytical skills.
- Effective communication and teamwork skills.
- The ability to think critically and creatively.
- An understanding of ethical and professional issues related to computer science.

Programme Learning Outcomes:

Upon completion of the program, graduates will be able to:

- Design, develop, and maintain computer systems and software applications using various programming languages and tools.
- Develop and manage database management systems.
- Develop and implement computer networks.
- Analyze algorithms and data structures.
- Develop and implement cloud computing solutions.
- Develop and implement artificial intelligence solutions.
- Apply mathematical and computational thinking and analysis to solve computer science problems.
- Understand and analyze ethical and professional issues related to computer science.
- Communicate effectively with team members and stakeholders.
- Continuously update their knowledge and skills in the rapidly evolving field of computer science.

Teaching-Learning Process:

The Bachelor of Computer Science program will be taught through a combination of lectures, tutorials, practical sessions, and projects. The program will use a blended learning approach, which combines online and offline learning, to provide students with flexibility and convenience. The program will also include guest lectures by industry experts to provide students with insights into real-world scenarios.

Assessment Process:

The assessment process for the Bachelor of Computer Science program will include a combination of continuous assessments and end-of-semester examinations. Continuous assessments will include assignments, quizzes, practical sessions, and projects, and will contribute towards the final grade for the course. End-of-semester examinations will be conducted at the end of each semester and will test students' understanding of the course material covered during the semester. The final grade for each course will be based on the continuous assessments and end-of-semester examination.

DIBRUGARH UNIVERSITY, RAJABHETA, DIBRUGARH – 786004

FYUGP Structure as per UGC Credit Framework of December, 2022

Year	Semester	Course	Title of the Course	Total Credit
Year 01	1st Semester	C - 1	Problem Solving using Computer	4
		Minor 1	Cyber Security	4
		GEC - 1	Office Automation Tools	3
		AEC 1	Modern Indian Language	4
		VAC 1	Understanding India	2
		VAC 2	Health and Wellness	2
		SEC 1	HTML and CMS Tools	3
				22
	2nd Semester	C - 2	Database Management Systems	4
		Minor 2	Introduction to Artificial Intelligence	4
		GEC 2	**Basic Hardware Maintenance**	3
		AEC 2	English Language and Communication Skills	4
		VAC 3	Environmental Science	2
		VAC 4	Yoga Education	2
		SEC 2	Multimedia Applications and Tools	3
				22
The students on exit shall be awarded Undergraduate Certificate (in the Field of Study/Discipline) after securing the requisite 44 Credits in Semester 1 and 2 provided they secure 4 credits in work based vocational courses offered during summer term or internship / Apprenticeship in addition to 6 credits from skill based courses earned during 1st and 2nd Semester				
Year 02	3rd Semester	C - 3	Computer System Architecture	4
		C - 4	Operating System	4
		Minor 3	Cloud Computing	4
		GEC – 3	Basics of Photoshop	3
		VAC 3	Option 1: Digital Fluency **OR** Option 2: Digital and Technological Solutions	2
		AEC – 3	Communicative English / Mathematical Ability	2
		SEC – 3	Basics of Pagemaker	3
				22

Abbreviations Used:

- C = Major
- GEC = Generic Elective Course / Multi Disciplinary Course
- AEC = Ability Enhancement Course
- SEC = Skill Enhancement Course
- VAC = Value Added Course

B.Sc. IN COMPUTER SCIENCE PROGRAMME (NEP)
DETAILED SYLLABUS OF 1st SEMESTER

Title of the Course : PROBLEM SOLVING USING COMPUTERS
Course Code : CSCC1
Nature of the Course : Major
Total Credits : 04
Distribution of Marks : 80 (End Sem)(60T+20P) + 20 (In-Sem)

COURSE OBJECTIVES:

- To provide an understanding of basic computer organization, including units of a computer, CPU, ALU, memory hierarchy, registers, and I/O devices.
- To familiarize with various techniques of problem solving, such as flowcharting, decision table, algorithms, structured programming concepts, and programming methodologies.
- To introduce the Python programming language and its elements.
- To enable to create Python programs.
- To provide with an understanding of structures in Python.

UNITS	CONTENTS	L	T	P	Total Hours
1 **(Marks)** **12 TH**	**Computer Fundamentals & Basic Computer Organization** Introduction to Computers: Characteristics of Computers, Uses of computers, Types and generations of Computers. Units of a computer, CPU, ALU, memory hierarchy, registers, I/O devices.	09	01	00	10
2 **(Marks)** **12 TH + 3 PR**	**Planning the Computer Program:** Concept of problem solving, Problem definition, Program design, Debugging, Types of errors in programming, Documentation. Flowcharting, decision table, algorithms, Structured programming concepts, Programming methodologies viz. top-down and bottom-up programming	09	01	04	14
3 **(Marks)** **12 TH + 5 PR**	**Introduction to Python:** Structure of a Python Program, Elements of Python Programme, Python Interpreter, Using Python as calculator, Python shell, Indentation. Atoms, Identifiers and keywords, Literals, Strings, Operators.	07	01	08	16
4 **(Marks)** **12 TH + 6 PR**	**Creating Python Programs:** Input and Output Statements, Control statements (Looping- while Loop, for Loop , Loop Control, Conditional Statement- if...else, Difference between break, continue and pass).	07	01	09	17
5 **(Marks)** **12 TH + 6 PR**	**Structures:** Numbers, Strings, Lists, Tuples, Dictionary, Modules, Defining Functions, Exit function, default arguments.	08	01	09	18
	Total (in Hrs)	**40**	**05**	**30**	**75**

Where, L: Lectures T: Tutorials P: Practicals (1P = 2 Hours)

MODES OF IN-SEMESTER ASSESSMENT: (20 Marks)

- One Internal Examination - **10 Marks**
- Others (Any one) - **10 Marks**
  - Quiz
  - Seminar presentation
  - Assignment

LEARNING OUTCOMES:

After the completion of this course, the learner will be able to:

- Describe the basic computer organization, including units of a computer, CPU, ALU, memory hierarchy, registers, and I/O devices.
- Plan computer programs, including problem definition, program design, debugging, and documentation.
- Apply various techniques of problem solving, such as flowcharting, decision table, algorithms, structured programming concepts, and programming methodologies.
- Create Python programs, including input and output statements, control statements, and conditional statements.
- Implement structures in Python, such as numbers, strings, lists, tuples, dictionary, modules, defining functions, and exit function.

SUGGESTED READINGS:

1. P. K. Sinha & Priti Sinha, "Computer Fundamentals", BPB Publications, 2018.
2. Dr. Anita Goel, Computer Fundamentals, Pearson Education, 2019.
3. T. Budd, Exploring Python, TMH, 1st Ed, 2019
4. A. B. Downey, Think Python, 2e: How to Think Like a Computer Scientist, O′Reilly, 2015.
5. Z. Shaw, LEARN PYTHON 3 THE HARD WAY, Addison-Wesley, 2017.
6. Arockia Mary P, Problem Solving and Python Programming, Shanlax Publications, 2021.
7. C. Morris, "https://www.kaggle.com/learn/python," [Online].
8. "https://docs.python.org/3/tutorial/index.html," [Online].

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Title of the Course : Cyber Security
Course Code : MINCSC1
Nature of the Course : Minor
Total Credits : 04
Distribution of Marks : 80 (End Sem)(60T+20P) + 20 (In-Sem)

COURSE OBJECTIVES:

- To introduce the concept of cyberspace, internet governance, and cyber security issues and challenges.
- To familiarize with different types of cyber crimes, modus operandi of cyber criminals, and legal perspective of cyber crime.
- To enable to understand social media platforms, their challenges, opportunities, and pitfalls, and the security issues related to social media.
- To provide with an understanding of e-commerce and digital payments, their components, threats, and security best practices.
- To introduce to digital device security, password policy, security patch management, and Wi-Fi security and to familiarize with different tools and technologies for cyber security.

UNITS	CONTENTS	L	T	P	Total Hours
1 **(Marks)** **12 TH**	**Introduction to Cyber security:** Defining Cyberspace and Overview of Computer and Web-technology, Architecture of cyberspace, Communication and web technology, Internet, World wide web, Advent of internet, Internet infrastructure for data transfer and governance, Internet society, Regulation of cyberspace, Concept of cyber security, Issues and challenges of cyber security.	06	01	-	07
2 **(Marks)** **12 TH**	**Cyber crime and Cyber law**: Classification of cyber crimes, Common cyber crimes-cyber crime targeting computers and mobiles, cyber crime against women and children, financial frauds,social engineering attacks, malware and ransomware attacks, zero day and zero click attacks, Cybercriminals modus-operandi , Reporting of cyber crimes, Remedial and mitigation measures, Legal perspective of cyber crime, IT Act 2000 and its amendments, Cyber crime and offences, Organisations dealing with Cyber crime and Cyber security in India.	07	01	-	08
3 **(Marks)** **12 TH + 6 PR**	**Social Media Overview and Security:** Introduction to Social networks. Types of Social media, Social media platforms, Social media monitoring, Hashtag, Viral content, Social media marketing, Social media privacy, Challenges, opportunities and pitfalls in online social network, Security issues related to social media, Flagging and reporting of inappropriate content, Laws regarding posting of inappropriate content, Best practices for the use of Social media.	09	01	10	20
4 **(Marks)** **12 TH + 8 PR**	**Commerce and Digital Payments** Definition of E- Commerce, Main components of E-Commerce, Elements of E-Commerce security, E-Commerce threats, E-Commerce security bestpractices, Introduction to digital payments, Components of digital payment and stake holders, Modes of digital payments- Banking Cards, Unified Payment Interface (UPI), e-Wallets, Unstructured Supplementary Service Data (USSD), Aadhar enabled payments, Digital payments related common frauds and preventive measures. RBI guidelines on digital payments and customer protection in unauthorised banking transactions. Relevant provisions of Payament Settlement Act,2007	09	01	10	20

5 **(Marks)** **12 TH + 6 PR**	**Digital Devices Security, Tools and Technologies for Cyber Security:** End Point device and Mobile phone security, Password policy, Security patch management, Data backup, Downloading and management of third party software, Device security policy, Cyber Security best practices, Significance of host firewall and Ant-virus, Management of host firewall and Anti-virus, Wi-Fi security, Configuration of basic security policy and permissions.	09	01	10	20
	Total (in Hrs)	**40**	**05**	**30**	**75**

Where, ***L: Lectures*** ***T: Tutorials*** ***P: Practicals (1P =2 Hours)***

MODES OF IN-SEMESTER ASSESSMENT: **(20 Marks)**

- One Internal Examination - **10 Marks**
- Others (Any one) - **10 Marks**
  - Quiz
  - Seminar presentation
  - Assignment

LEARNING OUTCOMES:

After the completion of this course, the learner will be able to:

- Understand the architecture of cyberspace, communication and web technology, internet infrastructure for data transfer and governance, and internet society.
- Identify the different types of cyber crimes, their modus operandi, reporting and remedial measures, and the legal perspective of cyber crime in India.
- Analyze social media platforms, their challenges, opportunities, and pitfalls, and the security issues related to social media.
- Describe the different components of e-commerce and digital payments, their threats, and security best practices.
- Apply digital device security, password policy, security patch management, and Wi-Fi security best practices.
- Use different tools and technologies for cyber security, such as host firewall, antivirus, and data backup.

SUGGESTED READINGS:

1. Cyber Crime Impact in the New Millennium, by R. C Mishra ,Auther Press. Edition 2010.
2. Cyber Security Understanding Cyber Crimes, Computer Forensics and LegalPerspectives by SumitBelapure and Nina Godbole, Wiley India Pvt. Ltd. (First Edition, 2011)
3. Security in the Digital Age: Social Media Security Threats and Vulnerabilities by Henry A. Oliver, Create Space Independent Publishing Platform. (Pearson,13th November, 2001)
4. Electronic Commerce by Elias M. Awad, Prentice Hall of India Pvt Ltd.
5. Cyber Laws: Intellectual Property & E-Commerce Security by Kumar K, Dominant Publishers.
6. Network Security Bible, Eric Cole, Ronald Krutz, James W. Conley, 2nd Edition, Wiley India Pvt. Ltd.

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Title of the Course : OFFICE AUTOMATION TOOLS
Course Code : GECCSC1
Nature of the Course : GENERIC ELECTIVE
Total Credits : 03
Distribution of Marks : 80 (End Sem)(60T+20P) + 20 (In-Sem)

COURSE OBJECTIVES:

- To introduce to the basics of office suite software, such as Microsoft Office and Libre Office.
- To develop skills in word processing, including formatting documents, creating tables, and using drawing tools.
- To teach how to use basic formulas and functions, macros, and pivot tables in spreadsheets.
- To instruct on creating and delivering effective presentations using presentation tools.
- To familiarize with cloud office automation using Office 365.

UNITS	CONTENTS	L	T	P	Total Hours
1 **(Marks)** **12 TH + 2 PR**	**Introduction to office suite:** Installation and basics of MS office/Libre office	04	01	04	09
2 **(Marks)** **12 TH + 2 PR**	**Word Processing:** Working with Documents- Formatting Documents - Setting Page style- Creating Tables - Drawing- Tools - Printing Documents - Operating with MS Word documents.	06	01	04	11
3 **(Marks)** **12 TH + 4 PR**	**Spreadsheets:** Worksheets, Formatting data, creating charts and graphs, using basic formulas and functions, macros, Pivot Table	05	01	06	12
4 **(Marks)** **12 TH + 4 PR**	**Presentation Tools:** Adding and formatting text, pictures, graphic objects, including charts, objects, formatting slides, notes, hand-outs, slide shows, using transitions, animations	05	01	06	12
5 **(Marks)** **12 TH + 8 PR**	**Cloud:** Introduction to cloud office automation using office-365.	05	01	10	16
	Total (in Hrs)	**25**	**05**	**30**	**60**

Where, ***L: Lectures*** ***T: Tutorials*** ***P: Practicals(1P = 2 Hours)***

MODES OF IN-SEMESTER ASSESSMENT: **(20 Marks)**

- One Internal Examination - **10 Marks**
- Others (Any one) - **10 Marks**
  - Quiz
  - Seminar presentation
  - Assignment

LEARNING OUTCOMES:

After the completion of this course, the learner will be able to:

- Install and use Microsoft Office and Libre Office software for various tasks.
- Format documents, create tables, and use drawing tools to enhance their word processing skills.
- Create spreadsheets, use basic formulas and functions, macros, and pivot tables to analyze data.
- Create effective presentations by adding and formatting text, pictures, graphic objects, including charts, objects, formatting slides, notes, hand-outs, slide shows, using transitions, animations.
- Use cloud-based office automation tools and understand the advantages of using such tools in their work.

SUGGESTED READINGS:

1. SushilaM , Introduction to Essential tools,JBA,2009.
2. Wang, W. (2018). Office 2019 For Dummies. United States: Wiley.
3. Kumar, B. (2017). Mastering MS Office. India: V&S Publishers.
4. Kumar A, (2019) Computer Basics with Office Automation, Dreamtech Press, ISBN: 9789389447194, 9789389447194.

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Title of the Course	**:**	**HTML AND CMS TOOLS**
Course Code	**:**	**SEC103**
Nature of the Course	**:**	**SKILL ENHANCEMENT COURSE**
Total Credits	**:**	**03**
Distribution of Marks	**:**	**80 (End Sem)(60T+20P) + 20 (In-Sem)**

COURSE OBJECTIVES:

- To introduce students to HTML and its history.
- To teach students how to write HTML code and view HTML webpages.
- To instruct students on using HTML tags and attributes effectively.
- To teach students how to format webpages using basic HTML tags, formatting tags, and color coding.
- To familiarize students with HTML lists, images, hyperlinks, tables, forms, and headers.
- To introduce students to popular CMS tools such as WordPress, Drupal, and Joomla.

UNITS	CONTENTS	L	T	P	Total Hours
1 **(Marks)** **12 TH + 2 PR**	**Introduction:** History of HTML, Software required for writing HTML code and viewing HTMLwebpage, HTML Tags and Attributes: HTML Tag vs. Element, HTML Attributes	04	01	04	09
2 **(Marks)** **12 TH + 2 PR**	**HTML-Basic Formatting Tags:** HTML Basic Tags, HTML Formatting Tags, HTML Color Coding, HTML-Grouping Using Div Span, Div and Span Tags for Grouping	05	01	04	10
3 **(Marks)** **12 TH + 4 PR**	**HTML-Lists:** Unordered Lists, Ordered Lists, Definition list **HTML-Images:** Image and Image Mapping **HTML-Hyperlink:** URL - Uniform Resource Locator, URL Encoding	05	01	06	12
4 **(Marks)** **12 TH + 4 PR**	**HTML-Table:** < table >,<th>,< tr >,< td >,< caption> ,<thead>,<tbody>,<tfoot>,<colgroup>,< col > **HTML-Form:** < input >, <textarea>, < button >, < select >, < label > **HTML-Headers:** Title, Base,Link, Styles, Script, Meta	05	01	06	12
5 **(Marks)** **12 TH + 8 PR**	**CMS TOOLS:** Wordpress, Drupal, Joomla	06	01	10	17
	Total (in Hrs)	**25**	**05**	**30**	**60**

Where, ***L: Lectures*** ***T: Tutorials*** ***P: Practicals(1P = 2 Hours)***

MODES OF IN-SEMESTER ASSESSMENT: **(20 Marks)**

- One Internal Examination - **10 Marks**
- Others (Any one) - **10 Marks**
  - Quiz, Seminar presentation , Assignment

LEARNING OUTCOMES:

After the completion of this course, the learner will be able to:

- Understand the history and importance of HTML.
- Write HTML code and view HTML webpages using appropriate software.
- Use HTML tags and attributes to create effective webpages.
- Format webpages using basic HTML tags, formatting tags, and color coding.
- Use HTML lists, images, hyperlinks, tables, forms, and headers to enhance their webpages.
- Understand the features and capabilities of popular CMS tools such as WordPress, Drupal, and Joomla, and their role in web development.

SUGGESTED READINGS:

1. Huddleston, R. (2018), Introduction to HTML and CSS -- O'Reilly.
2. Jon Duckett (2019), HTML and CSS, John Wiely.
3. Minnick,J. (2015).WebDesignwithHTML5andCSS3(8thEdition).Cengage Learning.
4. James P. (2011), Professional Mobile Web Development with WordPress, Joomla! and Drupal, Wiley Publications, ISBN: 978-0-470-88951-0

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DETAILED SYLLABUS OF 2ND SEMESTER

Title of the Course : DATABASE MANAGEMENT SYSTEM
Course Code : CSCC2
Nature of the Course : Major
Total Credits : 04
Distribution of Marks : 80 (End Sem)(60T+20P) + 20 (In-Sem)

COURSE OBJECTIVES:

- To introduce students to Database Management Systems and their characteristics.
- To teach students the concept of Conceptual Data Modeling using Entities and Relationships.
- To instruct students on the Relational Model and its concepts, constraints, and update operations.
- To teach students Database design techniques using ER and EER to relational mapping, functional dependencies, and normal forms.
- To familiarize students with SQL and its data definition, constraints, retrieval queries, and data manipulation statements.

UNITS	CONTENTS	L	T	P	Total Hours
1 (Marks) 12 TH + 2 PR	**Introduction to Database Management Systems:** Characteristics of database approach, data models, DBMS architecture and data independence. Advantages of using the DBMS approach.	07	01	02	10
2 (Marks) 12 TH + 4 PR	**Conceptual Data Modelling using Entities and Relationships:** Entity types, Entity sets, attributes, roles, and structural constraints, Weak entity types, ER diagrams, examples, Specialization and Generalization.	09	01	06	16
3 (Marks) 12 TH + 4 PR	**Relational Model:** Relational Model Concepts, Relational Model Constraints and relational database schemas, Update operations, transactions, and dealing with constraint violations.	08	01	06	15
4 (Marks) 12 TH + 4 PR	**Database design:** ER and EER to relational mapping, functional dependencies, normal forms up to third normal form	08	01	06	15
5 (Marks) 12 TH + 6 PR	**SQL:** SQL data definition and data types, specifying constraints in SQL, retrieval queries in SQL, INSERT, DELETE, and UPDATE statements in SQL, Additional features of SQL.	08	01	10	19
	Total (in Hrs)	**40**	**05**	**30**	**75**

Where, L: Lectures T: Tutorials P: Practicals(1 P = 2 Hours)

MODES OF IN-SEMESTER ASSESSMENT: (20 Marks)

- One Internal Examination - **10 Marks**
- Others (Any one) - **10 Marks**
  - Quiz, Seminar presentation , Assignment

LEARNING OUTCOMES:

After the completion of this course, the learner will be able to:

- Understand the characteristics of Database Management Systems and the advantages of using the DBMS approach.
- Create Conceptual Data Models using Entities and Relationships, including entity types, entity sets, attributes, and roles.
- Understand the Relational Model and its concepts, constraints, and update operations.
- Design databases using ER and EER to relational mapping, functional dependencies, and normal forms up to third normal form.
- Write SQL statements for data definition, specifying constraints, retrieval queries, and data manipulation statements like INSERT, DELETE, and UPDATE.

SUGGESTED READINGS:

1. R. Elmasri, S.B. Navathe, Fundamentals of Database Systems 6th Edition, Pearson Education, 2016.
2. R. Ramakrishanan, J. Gehrke, Database Management Systems 3rd Mc Graw Hill , 2018
3. A. Silberschatz, H.F. Korth, S. Sudarshan, Database System Concepts 6th Edition, McGraw Hill, 2019.

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Title of the Course	**:**	**Introduction to Artificial Intelligence**
Course Code	**:**	**MINCSC2**
Nature of the Course	**:**	**Minor**
Total Credits	**:**	**04**
Distribution of Marks	**:**	**80 (End Sem) + 20 (In-Sem)**

COURSE OBJECTIVES:

- To introduce the area of Artificial Intelligence and its related fields like Machine Learning.
- To teach the importance of AI and the criteria for its success.
- To instruct on defining a problem as a state space search and the issues in designing the search problem.
- To familiarize with search techniques like basic search methods, heuristic search, generate and test, and hill climbing.
- To teach the basic concepts of propositional and predicate logic and their applications in AI.
- To instruct the definition and importance of knowledge and various approaches used in knowledge representation.
- To teach the issues in knowledge representation and how to address them.

UNITS	CONTENTS	L	T	P	Total Hours
1 **(12 Marks)**	**Overview of A.I:** Introduction to AI, Importance of AI, AI and its related field (Machine Learning), AI techniques, Criteria for success.	09	03	-	12
2 **(15 Marks)**	**Problems, problem space and search:** Defining the problem as a state space search, Production system and its characteristics, Issues in the design of the search problem.	09	03	-	12
3 **(15 Marks)**	**Search techniques:** Basic search methods, Concept of Heuristic search, Generate and test, hill climbing, Basics of constraint satisfaction problems.	09	03	-	12
4 **(18 Marks)**	**Propositional Logic :** Basic concepts of propositional logic, truth-table, predicate logic, quantifiers.	09	03	-	12
5 **(20 Marks)**	**Knowledge Representation:** Definition and importance of knowledge, Knowledge representation, Various approaches used in knowledge representation, Issues in knowledge representation.	09	03	-	12
	Total (in Hrs)	**45**	**15**	**-**	**60**

Where, ***L: Lectures*** ***T: Tutorials*** ***P: Practicals (1P=2 Hours)***

MODES OF IN-SEMESTER ASSESSMENT: **(20 Marks)**

- One Internal Examination - **10 Marks**
- Others (Any one) - **10 Marks**
  - Quiz
  - Seminar presentation
  - Assignment

LEARNING OUTCOMES:

After the completion of this course, the learner will be able to:

- Understand the importance of AI and its related fields like Machine Learning.
- Define a problem as a state space search and identify the issues in designing the search problem.
- Apply various search techniques like basic search methods, heuristic search, generate and test, and hill climbing.
- Use propositional and predicate logic to solve problems in AI.

- Represent knowledge using various approaches and address the issues in knowledge representation.
- Apply the learned concepts and techniques in practical AI applications.

SUGGESTED READINGS:

1. David W. Rolston, “Principles of Artificial Intelligence and Expert System Development”, McGraw Hill, 2019.
2. Elaine Rich, Kevin Knight: “Artificial Intelligence”, Tata McGraw Hill, 2019.
3. D.W. Patterson, “Introduction to AI and Expert Systems”, PHI, 2018.

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Title of the Course : BASIC HARDWARE MAINTENANCE
Course Code : GECCSC2
Nature of the Course : GENERIC ELECTIVE
Total Credits : 03
Distribution of Marks : 80 (End Sem)(60T+20P) + 20 (In-Sem)

COURSE OBJECTIVES:

- To provide an overview of computer hardware and its various components.
- To enable students to identify and understand the functioning of different hardware components of a computer.
- To equip students with the knowledge and skills required for assembling, dissembling, and testing computer hardware components.
- To familiarize students with the techniques of testing computer hardware components using a multimeter.

UNITS	CONTENTS	L	T	P	Total Hours
1 **(Marks)** **12 TH + 2 PR**	**Introduction to computer hardware:** Computer Hardware Overview, Block Diagram Details, Parts of Computer. Motherboard: Types, Block Diagram, Identification of Ports, Chip, Slots, Connector, Section etc. CPU: CPU Socket details, Types of CPU, Identification, Basic Terminology of CPU. RAM: of RAM, Identification of RAM, RAM Operating Voltage.	05	01	04	10
2 **(Marks)** **12 TH + 2 PR**	**SMPS:** Concept of Current, SMPS pin details, SMPS Voltage, Testing of SMPS, How to use Multimeter, Testing of Power Cable.	05	01	04	10
3 **(Marks)** **12 TH + 4 PR**	**Hard disk:** Hard disk Types, Identification of Hard disk, Jumper Setting, Warranty, Measuring concept etc.	05	01	06	12
4 **(Marks)** **12 TH + 4 PR**	**Keyboard and Mouse:** Types, Identification, Repairing of Keyboard and Mouse.	05	01	06	12
5 **(Marks)** **12 TH + 8 PR**	**Assembling and Dissembling** of Computer, Testing of all Parts of Computer.	05	01	10	16
	Total (in Hrs)	**25**	**05**	**30**	**60**

Where, L: Lectures T: Tutorials P: Practicals(1P=2 Hours)

MODES OF IN-SEMESTER ASSESSMENT: (20 Marks)

- One Internal Examination - **10 Marks**
- Others (Any one) - **10 Marks**
  - Quiz
  - Seminar presentation
  - Assignment

LEARNING OUTCOMES:

After the completion of this course, the learner will be able to:

- Describe the different hardware components of a computer and their functions.
- Identify and differentiate between different types of hardware components.
- Assemble, dissemble, and test a computer system.
- Use a multimeter to test the power supply unit (SMPS) and other hardware components.
- Troubleshoot and repair common hardware issues with keyboard and mouse.

SUGGESTED READINGS:

1. Craig Zacker, John Rourke, PC Hardware: The Complete Reference, McGraw Hill Education; 1st edition (1 July 2017)
2. Stephen Bigelow, Troubleshooting, Maintaining & Repairing PCs , McGraw-Hill Education; 5th edition (2015)
3. Prajapat, Rahul. Field Technician - Computing & Peripherals (English Version): Computer Hardware and Maintenance. N.p.: Amazon Digital Services LLC - KDP Print US, 2018.

Title of the Course : MULTIMEDIA APPLICATIONS AND TOOLS
Course Code : SEC203
Nature of the Course : SKILL ENHANCEMENT COURSE
Total Credits : 03
Distribution of Marks : 80 (End Sem)(60T+20P) + 20 (In-Sem)

COURSE OBJECTIVES:

- Introduce students to multimedia and its various components.
- Provide an understanding of the stages involved in creating multimedia projects.
- Familiarize students with the hardware, software, and authoring tools used in multimedia production.
- Develop skills in using multimedia production tools such as Adobe Premier Pro, DaVinci Resolve, and Photoshop.

UNITS	CONTENTS	L	T	P	Total Hours
1 **(Marks)** **12 TH + 3 PR**	**Multimedia:** Introduction to multimedia, Components, Uses of multimedia. **Making Multimedia:** Stages of a multimedia project, Requirements to make good multimedia, Multimedia Hardware - Macintosh and Windows production Platforms, Hardware peripherals - Connections, Memory and storage devices, Multimedia software and Authoring tools.	05	01	05	11
2 **(Marks)** **12 TH + 3 PR**	**Text:** Fonts & Faces, Using Text in Multimedia, Font Editing & Design Tools, Hypermedia &Hypertext **Images:** Still Images – Bitmaps, Vector Drawing, 3D Drawing & rendering, Natural Light & Colors, Computerized Colors, Color Palletes, Image File Formats.	05	01	05	11
3 **(Marks)** **12 TH + 3 PR**	**Sound:** Digital Audio, MIDI Audio, MIDI vs Digital Audio, Audio File Formats.	05	01	05	11
4 **(Marks)** **12 TH + 8 PR**	**Video:** How Video Works, Analog Video, Digital Video, Video File Formats, Video Shooting and Editing.	05	01	10	16
5 **(Marks)** **12 TH + 3 PR**	**Tools:** Adobe Premier Pro, DaVinci Resolve, Photoshop.	05	01	05	11
	Total (in Hrs)	**25**	**05**	**30**	**60**

Where, L: Lectures T: Tutorials P: Practicals(1P=2 Hours)

MODES OF IN-SEMESTER ASSESSMENT: (20 Marks)

- One Internal Examination - **10 Marks**
- Others (Any one) - **10 Marks**
  - Quiz, Seminar presentation , Assignment

LEARNING OUTCOMES:

After the completion of this course, the learner will be able to:

- Define multimedia and identify its components and uses.
- Understand the stages involved in creating multimedia projects and the requirements needed to make good multimedia.
- Use multimedia hardware, software, and authoring tools.
- Use text, images, sound, video, and animation in multimedia production.
- Understand digital and MIDI audio, different audio file formats, how video works, different video file formats, and video shooting and editing techniques.
- Understand animation principles, techniques, and file formats.
- Able to use multimedia production tools such as Adobe Premier Pro, DaVinci Resolve, and Photoshop to create multimedia projects.

SUGGESTED READINGS:

1. Tay Vaughan, “Multimedia: Making it work”, TMH, Eighth edition. 2014
2. Ralf Steinmetz and Klara Naharstedt, “Multimedia: Computing,Communications Applications”, Pearson,2015.
3. Keyes, “Multimedia Handbook”, TMH. 217.
4. K. Andleigh and K. Thakkar, “Multimedia System Design”, PHI,2018

DETAILED SYLLABUS OF 3rd SEMESTER

Title of the Course : COMPUTER SYSTEM ARCHITECTURE
Course Code : CSCC3
Nature of the Course : Major
Total Credits : 04
Distribution of Marks : 80 TH (End Sem) + 20 (In-Sem)

COURSE OBJECTIVES:

- To introduce the fundamental concepts of digital logic circuits and their applications in computer systems.
- To provide an understanding of the principles of Boolean algebra and circuit simplification techniques.
- To explain the design and operation of combinational and sequential circuits, including decoders, multiplexers, registers, counters, and memory units.
- To develop an understanding of data representation and basic computer arithmetic, including number systems, complements, fixed and floating-point representation, character representation, addition, subtraction, and magnitude comparison.
- To provide an overview of basic computer organization and design, including computer registers, bus system, instruction set, timing and control, instruction cycle, memory reference, input-output, and interrupt.
- To explain the central processing unit's organization, including arithmetic and logical micro-operations, instruction formats, addressing modes, instruction codes, machine language, assembly language, and input-output programming.

UNITS	CONTENTS	L	T	P	Total Hours
1 **(20 Marks)**	**Introduction:** Logic gates, boolean algebra, combinational circuits, circuit simplification, flip-flops and sequential circuits, decoders, multiplexers, registers, counters, and memory units.	12	03	-	15
2 **(20 Marks)**	**Data Representation and basic Computer Arithmetic:** Number systems, complements, fixed and floating-point representation, character representation, addition, subtraction, magnitude comparison.	12	03	-	15
3 **(20 Marks)**	**Basic Computer Organization and Design:** Computer registers, bus system, instruction set, timing and control, instruction cycle, memory reference, input-output, and interrupt.	12	03	-	15
4 **(20 Marks)**	**Central Processing Unit:** Register organization, arithmetic, and logical micro-operations. Programming the Basic Computer: Instruction formats, addressing modes, instruction codes, machine language, assembly language, input output programming.	12	03	-	15
	Total (in Hrs)	**48**	**12**	**-**	**60**

Where, L: Lectures T: Tutorials P: Practicals(2Hours=1 L)

MODES OF IN-SEMESTER ASSESSMENT: (20 Marks)

- One Internal Examination - **10 Marks**
- Others (Any one) - **10 Marks**
  - Quiz, Seminar presentation , Assignment

LEARNING OUTCOMES:

After the completion of this course, the learner will be able to:

- Understand the fundamental concepts of digital logic circuits and their applications in computer systems.
- Analyze Boolean expressions and simplify digital circuits using various techniques.
- Design and analyze combinational and sequential circuits, including decoders, multiplexers, registers, counters, and memory units.
- Understand different number systems and perform basic computer arithmetic operations, including addition, subtraction, and comparison.
- Understand the basic computer organization and design, including computer registers, bus system, instruction set, timing and control, instruction cycle, memory reference, input-output, and interrupt.

- Understand the central processing unit's organization and programming, including arithmetic and logical micro-operations, instruction formats, addressing modes, instruction codes, machine language, assembly language, and input-output programming.

SUGGESTED READINGS:

1. M. Mano, Computer System Architecture, Pearson Education, 3rd Edition 2017.
2. A. J. Dos Reis, Assembly Language and Computer Architecture using C++ and JAVA, Course Technology, 2014.
3. W. Stallings, Computer Organization and Architecture Designing for Performance, 8th Edition, Prentice Hall of India ,2019.
4. Digital Design, M.M. Mano, Pearson Education Asia, 2001.

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Title of the Course : OPERATING SYSTEM
Course Code : CSCC4
Nature of the Course : Major
Total Credits : 04
Distribution of Marks : 80 TH (End Sem) + 20 (In-Sem)

COURSE OBJECTIVES:

- To understand the basic concepts and evolution of operating systems.
- To learn about the types and functions of operating systems, and their general working and structure.
- To understand the process management in operating systems and its various components.
- To learn about the different scheduling mechanisms and strategies used in operating systems.
- To understand the memory management in operating systems and its various techniques.
- To gain practical knowledge on using shell and various editors present in Linux.
- To learn about shell scripting, decision making, loops, and functions in shell.
- To understand the various utility programs and pattern matching utilities used in shell.

UNITS	CONTENTS	L	T	P	Total Hours
1 **(15 Marks)**	**Introduction:** Need and Evolution of Operating System, Types of Operating System, Functions of operating system, General Working of operating system, General Structure of Operating system.	10	02	-	12
2 **(15 Marks)**	**Process Management :** System view of the process and resources, initiating the OS, process address space, process abstraction, resource abstraction, process hierarchy, Thread model.	10	02	-	12
3 **(15 Marks)**	**Scheduling:** Scheduling Mechanisms, Strategy selection, non-pre-emptive and pre-emptive strategies.	08	02	-	10
4 **(15 Marks)**	**Memory Management:** Mapping address space to memory space, memory allocation strategies, fixed partition, variable partition, paging, virtual memory	10	03	-	13
5 **(20 Marks)**	**Shell introductionand Shell Scripting:** What is shell and various type of shell, Various editors present in linux. ➢ Different modes of operation in vi editor ➢ What is shell script, Writing and executing the shell script ➢ Shell variable(user defined and system variables) ➢ System calls, Using system calls ➢ Pipes and Filters ➢ Decision making in Shell Scripts(Ifelse,switch), Loops in shell ➢ Functions ➢ Utility programs(cut, paste,join,tr,uniqutilities) ➢ Pattern matching utility(grep)	10	03	-	13
	Total (in Hrs)	**48**	**12**	**-**	**60**

Where, L: Lectures T: Tutorials P: Practicals(1P=2Hours)

MODES OF IN-SEMESTER ASSESSMENT: (20 Marks)

- One Internal Examination - **10 Marks**
- Others (Any one) - **10 Marks**
  - Quiz, Seminar presentation , Assignment

LEARNING OUTCOMES:

After the completion of this course, the learner will be able to:

- Understand the basic concepts and evolution of operating systems.
- Differentiate between the types of operating systems and their functions.
- Explain the general working and structure of operating systems.
- Understand the process management in operating systems and its various components.
- Explain the different scheduling mechanisms and strategies used in operating systems.

- Understand the memory management in operating systems and its various techniques.
- Use shell and various editors present in Linux.
- Write and execute shell scripts, use decision making and loops in shell.
- Understand the various utility programs and pattern matching utilities used in shell.

SUGGESTED READINGS:

1. ASilberschatz,P.B.Galvin,G.Gagne,OperatingSystemsConcepts,John Wiley Publications, 2011.
2. A.S.Tanenbaum,ModernOperatingSystems,3rdEdition,PearsonEducation2013.
3. G.Nutt,OperatingSystems:AModernPerspective,2ndEditionPearsonEducation1997.
4. W.Stallings,OperatingSystems,Internals&DesignPrinciples,5 Edition,Prentice Hall of India. 2015.
5. M.Milenkovic,OperatingSystems-Conceptsanddesign,TataMcGrawHill,2014.

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Title of the Course : CLOUD COMPUTING
Course Code : MINCSC3
Nature of the Course : Minor
Total Credits : 04
Distribution of Marks : 80 (End Sem)(60T+20P) + 20 (In-Sem)

COURSE OBJECTIVES:

- To provide an overview of cloud architecture and model.
- To familiarize students with the technologies for network-based systems, system models for distributed and cloud computing, and NIST Cloud Computing Reference Architecture.
- To provide an understanding of virtualization, its basics, types, and implementation levels.
- To familiarize students with the architectural design of compute and storage clouds and the challenges in their design.
- To introduce students to the parallel and distributed programming paradigms, MapReduce, Twister, and Iterative MapReduce.
- To provide an understanding of cloud security, its challenges, and risks, and various security measures and architectures.

UNITS	CONTENTS	L	T	P	Total Hours
1 **(Marks)** **12 TH**	**Cloud architecture and model** Technologies for Network-Based System – System Models for Distributed and Cloud Computing – NIST Cloud Computing Reference Architecture. Cloud Models: - Characteristics – Cloud Services – Cloud models (IaaS, PaaS, SaaS) – Public vs Private Cloud – Cloud Solutions - Cloud ecosystem – Service management – Computing on demand.	07	01	-	08
2 **(Marks)** **12 TH**	**Virtualization** Basics of Virtualization - Types of Virtualization - Implementation Levels of Virtualization - Virtualization Structures - Tools and Mechanisms - Virtualization of CPU, Memory, I/O Devices - Virtual Clusters and Resource management – Virtualization for Data-center Automation.	09	01	-	10
3 **(Marks)** **12 TH + 4 PR**	**Cloud infrastructure** Architectural Design of Compute and Storage Clouds – Layered Cloud Architecture Development – Design Challenges - Inter Cloud Resource Management – Resource Provisioning and Platform Deployment – Global Exchange of Cloud Resources.	08	01	10	19
4 **(Marks)** **12 TH + 8 PR**	**Programming model** Parallel and Distributed Programming Paradigms – MapReduce , Twister and Iterative MapReduce – Hadoop Library from Apache – Mapping Applications - Programming Support - Google App Engine, Amazon AWS - Cloud Software Environments - Eucalyptus, Open Nebula, OpenStack, Aneka, CloudSim	08	01	10	19
5 **(Marks)** **12 TH + 8 PR**	**Security in the cloud** Security Overview – Cloud Security Challenges and Risks – Software-as-a-Service Security – Security Governance – Risk Management – Security Monitoring – Security Architecture Design – Data Security – Application Security – Virtual Machine Security - Identity Management and Access Control – Autonomic Security.	08	01	10	19
	Total (in Hrs)	**40**	**05**	**30**	**75**

Where, ***L: Lectures*** ***T: Tutorials*** ***P: Practicals (1P=2 Hours)***

MODES OF IN-SEMESTER ASSESSMENT: **(20 Marks)**

- One Internal Examination - **10 Marks**
- Others (Any one) - **10 Marks**
  - Quiz
  - Seminar presentation
  - Assignment

LEARNING OUTCOMES:

After the completion of this course, the learner will be able to:

- Understand the basics of cloud architecture and models and their characteristics.
- Explain the technologies for network-based systems and the system models for distributed and cloud computing.
- Identify the different cloud models and services and differentiate between them.
- Understand the basics of virtualization, its types, and implementation levels.
- Explain the architectural design of compute and storage clouds and the challenges in their design.
- Identify the different parallel and distributed programming paradigms and their applications.
- Explain the basics of cloud security, identify its challenges and risks, and understand various security measures and architectures.

SUGGESTED READINGS:

1. Kai Hwang, Geoffrey C Fox, Jack G Dongarra, “Distributed and Cloud Computing, From Parallel Processing to the Internet of Things”, Morgan Kaufmann Publishers, 2012.
2. John W.Rittinghouse and James F.Ransome, “Cloud Computing: Implementation, Management, and Security”, CRC Press, 2018.

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Title of the Course : BASICS OF PHOTOSHOP
Course Code : GECCSC3
Nature of the Course : GENERIC ELECTIVE
Total Credits : 03
Distribution of Marks : 80 (End Sem)(60T+20P) + 20 (In-Sem)

COURSE OBJECTIVES:

- To introduce students to the Photoshop interface and tools.
- To familiarize students with importing and saving files in Photoshop.
- To provide an understanding of layers, masks, and selections in Photoshop.
- To introduce students to basic retouching tools in Photoshop.
- To provide an understanding of color correction tools and text in Photoshop.

UNITS	CONTENTS	L	T	P	Total Hours
1 **(Marks)** **12 TH + 2 PR**	**Introduction to Photoshop Interface and Tools:** Introduction to the Photoshop interface, Understanding the different tools and palettes, Setting up a workspace.	05	01	03	09
2 **(Marks)** **12 TH + 2 PR**	**Importing and Saving Files:** Importing files into Photoshop, Understanding file formats and resolutions, Saving files in different formats.	05	01	03	09
3 **(Marks)** **12 TH + 2 PR**	**Working with Layers, Masks, and Selections:** Understanding layers and how to use them, Creating masks and selections, Understanding the difference between raster and vector graphics.	05	01	03	09
4 **(Marks)** **12 TH + 6 PR**	**Basic Retouching Tools:** Using the spot healing brush tool, Using the clone stamp tool, Understanding the patch tool.	05	01	10	16
5 **(Marks)** **12 TH + 8 PR**	**Color Correction Tools and Text:** **U**derstanding color modes, Using the curves tool, Using the levels tool, Using the hue/saturation tool, Creating text layers, Formatting text, Applying effects to text.	05	01	11	17
	Total (in Hrs)	**25**	**05**	**30**	**60**

Where, L: Lectures T: Tutorials P: Practicals(1P=2 Hours)

MODES OF IN-SEMESTER ASSESSMENT: (20 Marks)

- One Internal Examination - **10 Marks**
- Others (Any one) - **10 Marks**
  - Quiz
  - Seminar presentation
  - Assignment

LEARNING OUTCOMES:

After the completion of this course, the learner will be able to:

- Navigate and utilize the Photoshop interface and tools.
- Import and save files in Photoshop and understand different file formats and resolutions.
- Work with layers, masks, and selections in Photoshop.
- Retouch images using basic tools such as the spot healing brush tool, clone stamp tool, and patch tool.
- Apply color correction techniques using tools such as curves, levels, and hue/saturation, and create and format text layers in Photoshop.

SUGGESTED READINGS:

1. McCathren, S. (2019). Photoshop for Beginners: The Ultimate Guide to Learning Adobe Photoshop for Beginners. CreateSpace Independent Publishing Platform.
2. Andrews, P. (2017). Photoshop CC Basics for Photographers: Getting Started with Photoshop CC. CreateSpace Independent Publishing Platform.
3. Addison, T. (2018). Photoshop CC Essentials: A Beginner's Guide To Adobe Photoshop Creative Cloud. Independently published.
4. Evening, M. (2016). Adobe Photoshop CC Classroom in a Book (2015 release). Adobe Press.
5. Faulkner, A. (2018). Real World Adobe Photoshop CC for Photographers. Peachpit Press.

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Title of the Course : DIGITAL FLUENCY
Course Code : VAC 3 (OPTION 1)
Nature of the Course : VALUE ADDED COURSE
Total Credits : 02
Distribution of Marks : 40 (End Sem) (30T+10P) + 20 (In-Sem)

COURSE OBJECTIVES:

- To introduce students to the concept of digital fluency and its importance in today's world.
- To provide an understanding of computer basics, including hardware, software, and operating systems.
- To familiarize students with internet and web browsing, including search engines, email, and social media.
- To teach students about online safety, including cybersecurity threats, protecting personal information, and safe online behavior.

UNITS	CONTENTS	L	T	P	Total Hours
1 (Marks) 8 TH + 2 PR	**Introduction to Digital Fluency** Understanding digital fluency, Importance of digital fluency,Skills required fordigital fluency	02	01	08	11
2 (Marks) 8 TH + 2 PR	**Computer Basics** Introduction to computer hardware and software, Basic computer componentsand their functions, Basics of Operating system and file management, Internet and Web Browsing.	04	01	08	13
3 (Marks) 14 TH + 6 PR	**Introduction to the Internet, email and Social Media** Navigating the web, Search engines and search strategies, Creating and managing email accounts, Composing, and sending emails, Email etiquette and best practices, Introduction to social media platforms, Privacy, and security settings, Creating and managing social media accounts, Posting, and sharing content.	06	01	14	21
	Total (in Hrs)	**12**	**03**	**30**	**45**

Where, L: Lectures T: Tutorials P: Practicals(1P= 2 Hours)

MODES OF IN-SEMESTER ASSESSMENT: (10 Marks)

- One Internal Examination - **05 Marks**
- Others (Any one) - **05 Marks**
  - Quiz
  - Seminar presentation
  - Assignment

LEARNING OUTCOMES:

After the completion of this course, the learner will be able to:

- Define digital fluency and identify the skills required to be digitally fluent.
- Have a basic understanding of computer hardware and software, including operating systems and file management.
- Navigate the web, perform effective online searches, and create and manage email accounts.
- Create and manage social media accounts, understand privacy and security settings, and post and share content.
- Understanding of online safety and be able to identify and mitigate cybersecurity risks.

SUGGESTED READINGS:

1. P. N. Thomas and A. Raghuramaraju, "Digital India: Understanding Information, Communication and Social Change," New Delhi, India: Sage Publications India Pvt Ltd, 2017.
2. R. Thareja, "Computer Fundamentals and Programming in C," New Delhi, India: Oxford University Press, 2021.
3. R. P. Jain and S. K. Jain, "Introduction to Information Technology," New Delhi, India: Firewall Media, 2015.

4. K. D. Tripathi, “Social Media: Concepts, Practices and Trends,” New Delhi, India: PHI Learning Pvt. Ltd., 2020.
5. N. K. Venkateswaran, “Cyber Security and Digital Forensics: A Practical Approach,” Boca Raton, FL: CRC Press, 2018.
6. S. Gandhi and R. Sharma, “Digital Privacy and Security,” New Delhi, India: Springer Nature Singapore Pte Ltd, 2021.

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Title of the Course	**:**	**DIGITAL AND TECHNOLOGICAL SOLUTIONS**
Course Code	**:**	**VAC 3 (OPTION 2)**
Nature of the Course	**:**	**VALUE ADDED COURSE**
Total Credits	**:**	**02**
Distribution of Marks	**:**	**40 (End Sem) (30T+10P) + 20 (In-Sem)**

COURSE OBJECTIVES:

- To provide advanced digital skills and knowledge to students
- To develop critical thinking and problem-solving abilities in the digital realm
- To prepare students to be leaders in the digital landscape
- To enhance students' employability by providing them with relevant and in-demand digital skills

UNITS	CONTENTS	L	T	P	Total Hours
1 (Marks) 8 TH + 2 PR	**Advanced Internet Skills** Advanced search techniques and web development using HTML, CSS, and JavaScript, Understanding, and using web APIs, Building a responsive website.	02	01	08	11
2 (Marks) 8 TH + 2 PR	**Digital Media and Content Creation** Advanced photo editing using Photoshop or GIMP, Video and audio editing using Final Cut Pro or Adobe Premiere Pro, Creating digital content for marketing and branding.	04	01	08	13
3 (Marks) 14 TH + 6 PR	**Cybersecurity, Digital Privacy and Data Analytic** Advanced encryption techniques for data security, Understanding and mitigating advanced cyber threats, Implementing advanced digital privacy measures. Advanced data analysis using Excel or Tableau, understanding data visualization, and creating compelling visualizations, analyzing complex data sets to derive insights.	06	01	14	21
	Total (in Hrs)	**12**	**03**	**30**	**45**

Where, ***L: Lectures*** ***T: Tutorials*** ***P: Practicals(1P=2 Hours)***

MODES OF IN-SEMESTER ASSESSMENT: **(10 Marks)**

- One Internal Examination - **05 Marks**
- Others (Any one) - **05 Marks**
  - Quiz
  - Seminar presentation
  - Assignment

LEARNING OUTCOMES:

After the completion of this course, the learner will be able to:

- Utilize advanced search techniques and web development tools to create responsive websites
- Edit digital media including photos, videos, and audio using advanced software
- Understand and implement advanced cybersecurity and privacy measures to protect digital assets
- Analyze complex data sets using Excel or Tableau and create compelling visualizations
- Lead digital transformation and drive innovation in organizations
- Adapt to changing technologies and trends in the digital landscape.

SUGGESTED READINGS:

1. P. N. Thomas and A. Raghuramaraju, "Digital India: Understanding Information, Communication and Social Change," New Delhi, India: Sage Publications India Pvt Ltd, 2017.

2. R. Thareja, “Computer Fundamentals and Programming in C,” New Delhi, India: Oxford University Press, 2021.
3. R. P. Jain and S. K. Jain, “Introduction to Information Technology,” New Delhi, India: Firewall Media, 2015.
4. K. D. Tripathi, “Social Media: Concepts, Practices and Trends,” New Delhi, India: PHI Learning Pvt. Ltd., 2020.
5. N. K. Venkateswaran, “Cyber Security and Digital Forensics: A Practical Approach,” Boca Raton, FL: CRC Press, 2018.
6. S. Gandhi and R. Sharma, “Digital Privacy and Security,” New Delhi, India: Springer Nature Singapore Pte Ltd, 2021.

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Title of the Course : BASICS OF PAGEMAKER
Course Code : SEC303
Nature of the Course : SKILL ENHANCEMENT COURSE
Total Credits : 03
Distribution of Marks : 80 (End Sem)(60T+20P) + 20 (In-Sem)

COURSE OBJECTIVES:

- To provide an overview of Adobe PageMaker and its interface
- To teach students how to create a new document and set up page layouts
- To teach students how to add and format text, create paragraph styles, and work with text boxes
- To teach students how to import, resize, crop, and wrap text around images
- To teach students how to draw shapes, work with line tools, and use the pen tool
- To teach students how to work with master pages, create columns and grids, and use color and swatches
- To teach students how to export documents to PDF and set up print options, and troubleshoot printing issues

UNITS	CONTENTS	L	T	P	Total Hours
1 **(Marks)** **12 TH + 2 PR**	**Introduction to PageMaker** Overview of PageMaker Interface, Creating a New Document, Setting up Page Layouts	05	01	05	11
2 **(Marks)** **12 TH + 2 PR**	**Working with Text** Adding and Formatting Text, Working with Text Boxes, Creating Paragraph Styles	05	01	05	11
3 **(Marks)** **12TH + 4 PR**	**Working with Images** Importing Images, Resizing and Cropping Images, Wrapping Text around Images	05	01	05	11
4 **(Marks)** **12 TH + 4 PR**	**Working with Shapes , Lines , Page Layout and Design** Drawing Shapes, Working with Line Tools, Using the Pen Tool, Working with Master Pages, Creating Columns and Grids, Using Color and Swatches	05	01	05	11
5 **(Marks)** **12 TH + 8 PR**	**Exporting and Printing** Exporting to PDF, Setting up Print Options, Troubleshooting Printing Issues	05	01	10	16
	Total (in Hrs)	**25**	**05**	**30**	**60**

Where, L: Lectures T: Tutorials P: Practicals(1P=2 Hours)

MODES OF IN-SEMESTER ASSESSMENT: (20 Marks)

- One Internal Examination - **10 Marks**
- Others (Any one) - **10 Marks**
    - Quiz, Seminar presentation , Assignment

LEARNING OUTCOMES:

After the completion of this course, the learner will be able to:

- Navigate the PageMaker interface and create a new document
- Set up page layouts and work with text boxes and paragraph styles
- Import and manipulate images and wrap text around them
- Create and edit shapes and lines using various tools
- Design and layout pages using master pages, columns, and grids
- Export documents to PDF and set up print options, and troubleshoot printing issues.

SUGGESTED READINGS:

1. Bouton, G.D. (1990). Desktop publishing with PageMaker. San Francisco: Sybex.
2. Gruman, G. & Ventana Press. (1997). PageMaker 6.5 for Windows for dummies. Foster City, CA: IDG Books.

3. Alspach, T. (1998). PageMaker 6.5 Plus for Windows: Visual QuickStart Guide. Berkeley, CA: Peachpit Press.
4. Adobe Creative Team. (2002). Adobe PageMaker 7.0 Classroom in a book. San Jose, CA: Adobe Press.
5. Alspach, T. (2001). PageMaker 7.0 for Windows and Macintosh: Visual QuickStart Guide. Berkeley, CA: Peachpit Press.