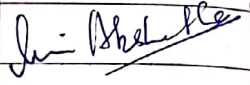
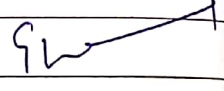
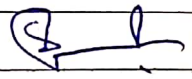
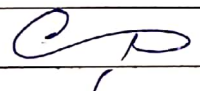
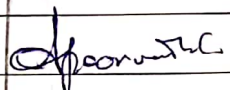
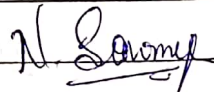


Proceedings of Bos meeting

Date: 25/10/2018

Time: 10:30 Am

place: PG Block computer laboratory.

Sl. No	Name of the member	Designation	Signature.
1	Ms. Maria Akshatha	Chairperson	
2	Dr. G. Hemantha. Kumar	University Nominee	
3	Dr. Suresha.	College Nominee	
4	Dr. Basavanna. M	College Nominee	
5	Ms. Apoorva. M.C	Members	
6	Ms. Sowmya	member.	

Agenda

1. To approve the syllabus and scheme of Teaching for two years - four semester Msc - course from the Academic year 2018 - 2019. And to revise syllabus of 2016 - 2017.
2. To prepare and approve the panel of Examiners for PG computer science Examination of 2018 - 2019.

ST. PHILOMENA'S COLLEGE (AUTONOMOUS), MYSURU-570 015
CHOICE BASED CREDIT SYSTEM
M.SC COMPUTER SCIENCE COURSE STRUCTURE & SYLLABUS
DURATION OF THE COURSE: TWO YEARS

Sl. No	Code No	TITLE OF THE PAPERS	Type	L	T	P	Credits	Total Credits
FIRST SEMESTER								
1.		Operating System						
2.		Software Engineering	HC	4	0	0	4	20+4 (OE)
3.		Practical- C & C++	HC	3	1	0	4	
Any two of the following SC to be Chosen								
4.		Data Structures with C	SC	4	0	0	4	
5.		Problem Solving in C++	SC	4	0	0	4	
6.		Data Communication	SC	4	0	0	4	
SECOND SEMESTER								
7.		Database Management System						
8.		Computer Networks	HC	4	0	0	4	16+4 (OE)
9.		Practical - DBMS and Networks	HC	4	0	0	4	
Any one of the following SC to be Chosen								
10.		System Software	SC	4	0	0	4	
11.		Data Warehousing and Data Mining	SC	3	1	0	4	
12.		Computer Application in Business (Interdisciplinary)	SC	4	0	0	4	
THIRD SEMESTER								
13.		Wireless Networking						
14.		Web Engineering	HC	4	0	0	4	20
Any two of the following SC to be Chosen								
15.		Practical –internet and Python Programming	HC	0	0	4	4	
16.		Python Programming	SC	4	0	0	4	
17.		Mobile Computing	SC	4	0	0	4	
18.		Cloud Computing	SC	3	1	0	4	
19.		Mathematical	SC	4	0	0	4	

Computation(Interdisciplinary)

FOURTH SEMESTER

27.	Major Project	HC	0	4	6	10	18
28.	Internet of Things in The Cloud	HC	4	0	0	4	
Any one of the following SC to be Chosen							
30.	PHP Programming	SC	4	0	0	4	
31.	Network Security	SC	4	0	0	4	
32.	Big Data Analytics	SC	4	0	0	4	

Total Credits (HC:50+SC:24+ OE:8)

82

OE FOR OTHER DEPARTMENT

	SEM						
33.	I	Internet Fundamentals	OE	4	0	0	4
34.	II	Multimedia Technology	OE	4	0	0	4
35.	III	Web Designing	OE	4	0	0	4

HC= HARD CORE PAPER. SC= SOFT CORE PAPER. OE = OPEN ELECTIVE

ST.PHILOMENA'S COLLEGE (AUTONOMOUS), MYSURU
Department of Computer Science (PG)
Board of Studies Meeting 2018

Subject: COMPUTER SCIENCE (PG)

Date: 25/10/2018

Time: 10.30am

Place: Computer Science Lab

AGENDA

1. To approve the syllabus and the scheme of teaching for two years-four semesters MSc course from the academic year 2018-2019.
2. To prepare and approve the panel of examiners for PG Computer Science examinations of 2018-2019.

Discussions

The BOS members were welcomed by the department & the chairperson.

- .. Syllabus was discussed by the BOS members & draft syllabus was approved
- .. preparation and approval of course structure from academic year 2018-2019 onwards. [Is attached]
- Approval of panel of BOE members for the Academic year 2018-19
- Question paper pattern was revised.
- discussions about the interdisciplinary papers.
- Few corrections about allating credits were discussed. For 2016-2017 scheme.
- discussions about the marks allotment. ~~about~~ & the major project. was approved. For 2016-2017 & 2018-2019 syllabus.

Question paper pattern - [SAMPLE]

Part A

5 x 2 = 10 marks

- ① a)
b)
c)
d)
e)
f)

Part B

unit 1

②

or

③

Unit 2

15 marks

④

a)

5 marks

b)

10 marks

or.

⑤

15 marks

Unit 3

⑥

15 marks

or.

⑦

15 marks

a)

5 marks

b)

5 marks

c)

5 marks

Unit 4

⑧

15 marks

or.

⑨

15 marks

Major project marks distribution and credit allotment for 4th sem 2017 batch

Total
200 marks.

- 60 marks → Internal (C₁ + C₂)
- 50 marks → Report
- 50 marks → Coding and Implementation
- 20 marks → Viva
- 20 marks → presentation.

→ Total credits for projects allotted was - 8 credits. (2016-2017).
In for students welfare prospective credits was changed to 10.

→ And in old syllabus for 4th sem 3 subjects were allotted. panel members suggested to Retain 2 subjects with 4 credits each from same specialization.

IWE:

Major project	HC	0:2:8	10
Prp. programming.	SC	3:1:0	4
Balance of things in cloud.	SC	3:1:0	4.

SN	Type	Existing	Proposed	L	T	P
First Semester						
1	HC	Operating System	Operating System	4	0	0
2	HC	Software Engineering	Data structures	3	0	1
3	HC	Practical – C and C++	Computer Organization & Architecture	3	0	1
	OE	From other department	From other department			
Second Semester						
4	HC	Database Management System	Database Management System	3	0	1
5	HC	Computer Networks	Computer Networks	3	0	1
6	HC	Practical – DBMS and Networks	Software Engineering	0	0	4
Third Semester						
7	HC	Wireless Networking	Internet of things	4	0	0
8	HC	Web Engineering	-	3	0	1
9	HC	Practical – Web and Python Programming	Minor Project	0	0	4
	OE	-	Swayam MOOC course			
Fourth Semester						
10	HC	Major Project	Major Project	4	4	0
11	HC	Internet of Things in The Cloud	-			
OE for other Departments						
12	OE	Multimedia Technology	Information Technology and Office Automation	3	1	0
13	OE	Web Designing	Web Designing	3	1	0

HARDCORE PAPERS

SL NO.	PAPER	L	T	P	Credits
1	Data Structures	3	0	1	4
2	Computer Organization & Architecture	4	0	0	4
3	Operating System	4	0	0	4
4	Database Management System	3	0	1	4
5	Computer Networks	4	0	0	4
6	Internet of Things	4	0	0	4
7	Software Engineering	4	0	0	4
8	Minor Project	0	0	4	4
9	Major Project	0	4	4	8

SOFTCORE PAPERS

SL NO.	PAPER	L	T	P	Credits
1	Dot Net with C#	3	0	1	4
2	Programming Language Pragmatics	4	0	0	4
3	Data Communication	4	0	0	4
4	Java Programming	3	0	1	4
5	Research Techniques & Analysis	4	0	0	4
6	Computer Graphics	3	0	1	4
7	Data Warehousing & Data Mining	3	1	0	4
8	Python Programming	3	0	1	4
9	Cryptography and Network Security	4	0	0	4
10	Finite Automata	3	0	1	4
11	Cloud Computing	4	0	0	4
12	PHP Programming	3	0	1	4
13	Wireless Networking	4	0	0	4
14	Big data Analytics	4	0	0	4
15	Advanced Databases	3	0	1	4
16	Software Testing & Quality Assurance	2	1	1	4
17	Mobile Computing	4	0	0	4
18	Web Engineering	3	0	1	4
19	Machine Learning & Data Science	2	1	1	4
20	Computer Application in Business	3	0	1	4
21	Mathematical Computation	3	0	1	4

Discussions.

- The BOS members were welcomed by the department and chairperson.
- Syllabus was discussed by the BOS members and few corrections about credit allocation were suggested as follows.
 - * Hard core subject - min 40 credits.
 - * minor project - 4 credits.
 - * major project - 8 credits.
- Panel suggested to make a list of hardware and software subjects separately.
- Introduction of new subject in 1st semester was specified and computer organization and architecture was suggested as hard core subject for the year 2020-21.
- members also gave suggestion for adapting Bridge course on computer languages.
- The department put forward subject Revision in the current year, 2019-20, and panel approved revision of 3rd sem syllabus by allotting java programming as Hard core with - 4 credits.
- java practicals has been introduced instead of web Engineering practicals.
- Approval of BOS panel members of the year 2020-21.

PROCEEDINGS OF BOS MEETING

PG Department of Computer Science.

Date :- 23/11/2020.

Time :- 12.00pm



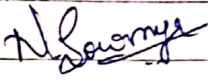
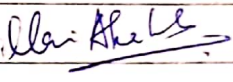
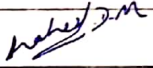
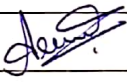
PLACE :- PG conference hall.

AGENDA:

1. To Discuss and implement the changes of. In Cooperating modifications in the proposed learning Outcome Based Curriculum
2. To Review and approve the Regulations / Guidelines of M.Sc programme in Computer Science.
3. To Review and approve the panel of Examiners for the year 2020-21.
4. To Review and approve the Question paper pattern for the new Curriculum for the year 2020-21
5. Any other matter with the permission of the Chair.

Date _____
Page _____

List of Board of members present

Sl. No	Name of the member	Designation	Signature
2	Prof. Suresha.	Chairperson.	
3	Dr. H.N. Nagendraswamy	University Nominnee	 23/11/2020
4	Dr. Basaranna. M	College Nominnee	(Online)
5	Ms. Seomya. N.	Member.	
6	Ms. Maria Akshatha.	Member.	
7	Mr. Mahesh D.M.	Member.	
8	Ms. Arunodaya. K. Nambiar.	Member.	
9.	Mr. Lathish Sandesh	Industry relevant	(Online)

Changes in the Curriculum

Sl. No	Existing paper to be replaced	New Paper Proposed	Credits	Justification	Percentage of change
First Semester					
1	C and C++ Practical	Computer Organization and Architecture	4	This new course paper explores how machine are designed, built and operate. Knowing what's inside and how it works will help the student to design, develop and implement applications better, faster, cheaper, more efficient and easier to use.	100
2	Problem Solving in C++	Dot Net with C#	4	To provide the knowledge on fundamentals of new framework this new course paper is introduced. C#.net is preferred in fast development environment and it offers a great career opportunity for students	100
3	-	Programming Language Pragmatics	2	In order to provide the knowledge on different language classes and their relationship this new course paper is introduced. It helps the students to choose the most appropriate language for a given task.	100
4	-	Research Techniques and Analysis	4	To provide student necessary training to undertake research projects this new course paper is introduced.	100
Second Semester					
5	-	JAVA Programming	4	In order to train students in back-end development projects which includes big data and Android development this new course paper is introduced.	100
6	-	Computer Graphics	4	This new course paper provides students knowledge on the fundamentals of Graphics and Animation, which helps students to design applications in 2D & 3D graphics which includes engineering, medical imaging, art and entertainment applications.	100
7	-	Cryptography and Network Security	4	Cryptography plays a crucial role in encrypting modern day applications such as whatsapp, digital signature, etc. Thus this new course provides the knowledge on data encryption and data security.	100

Discussions

The BOS members were welcomed by the department and chairperson.

Syllabus was discussed by BOS members and few corrections regarding the credit pattern of few courses were suggested.

BOS members also suggested to add tutorial classes for the following courses.

I sem	Operating system	3:1:0
III sem	IOT	3:1:0
IV sem	Wireless Network	3:1:0

Question paper pattern was revised for the year 2020-21.

panel of Examiners for the year 2020-21 was discussed and approved.

Third Semester

8	-	Matlab Programming	2	It is a high-performance language for technical computing like deep learning, image processing, data analysis etc. This new course paper is introduced to train the students for the job market requirements.	100
9	-	Web Technology	2	In order to train students in creating effective web applications using latest web technologies this new course paper is introduced.	100
10	-	Advanced DBMS	4	In order to train students in advanced topics in DBMS to meet and fit the market requirements this new course paper is introduced.	100

Fourth Semester

11	Network Security	Finite Automata	4	Finite automata are used in text processing, compilers, and hardware design. CFGs are used in programming languages and artificial intelligence. Thus this new course paper helps students to learn about basic compiler construction.	100
12	-	Software Testing	2	Testing is required for an effective performance of software application or product. Thus this new course paper helps students to learn different methods of identifying errors in software and removing it.	100

OVERALL PERCENTAGE OF CHANGE IN SYLLABUS = 40%

Proceedings of BOS Meeting.

PG Department of Computer Science.

Subject : Computer Science

Date : 23/12/2023

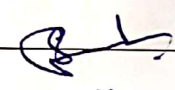
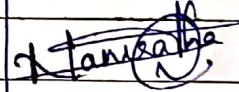
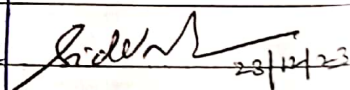
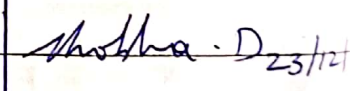
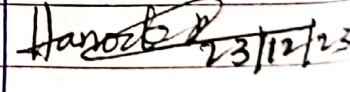
Time : 11:30 AM.

Place : PG Conference hall

AGENDA:

To retain and continue the existing curriculum for the academic year 2023-2024.

List of Board of members present.

Sl.No	Name	Designation	Signature
1	Dr. Suresha S	University Nominee Chairperson.	
2	Ms. Namratha K.H	HOD of Dpt.	Namratha 
3	Dr. Siddesha. S	College Nominee	 23/12/23
4	Ms. Shobha. D	College Nominee	 23/12/23
5	Mr. Harock. A	Member.	 23/12/23
6	Mr. Lokesh G.	Member (Relevant Industry.	ABSENT

He discussed and approved the Syllabus of 2023-2024. He retained the same Syllabus without any modification.

~~Signature~~

HoD
PG Dept. of Computer Science
St. Philomena's College
MYSORE-570 015

23/12/23

PG COMPUTER SCIENCE
ST. PHILOMENA'S COLLEGE (AUTONOMOUS), MYSORE

~~PROCEEDING~~

BOS MEETING : 08-10-2024


: 11.30 AM

With reference to the above, the BOS meeting was convened at 11.30 AM on 08th October 2024 in the PG Department of Computer Science, St. Philomena's College (Autonomous) Mysore, to discuss the following agenda.

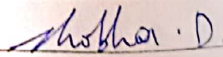
- 1) Review of the structure of existing programme, course syllabi & approved of the same for next academic year.
- 2) Approve the list of new subjects to be introduced which are on-par with the latest trends & technologies.
- 3) Any other approvals.

The following members participated in the meeting:

1) Dr. Suresha
University Nominee
University of Mysore


Chairperson
BOS

2) Ms. Shobha. D
Asst. Professor
Pooja Bhagavati Mahajanay College
PG center, Mysore


College Nominee

3) Pr. Siddesha S
College Nominee


College Nominee

4) Mr. Shiva Kumar - C
Asst. Professor

PG Dept of Computer Science

St. Philomena's College

Mysore


member

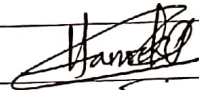
5) Mr. Hanock Jacob - A

Asst. Professor

PG Dept. of Computer Science

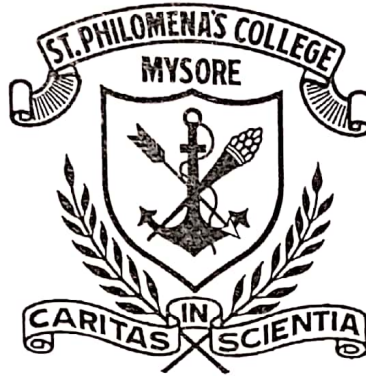
St. Philomena's College

Mysore


member

CHANGES IN THE CURRICULUM

SEMESTER	NEW SUBJECT	CREDITS	JUSTIFICATION	CHANGE
2	Digital Image Processing	4	Students preferred Image Processing project work	to do
3	Artificial Intelligence & Machine Learning	4	Students preferred to use ML algorithms in project work	
3	Data Analytics	4	As requested by PG Dept. of Commerce	
4	Information Technology & Office Automation	4	Combined two 2-credit courses ITOA-1 & ITOA-2	
3	Web Designing	4	Combined two 2-credit courses W-D-1 & W-D-2	



ST. PHILOMENA'S COLLEGE (AUTONOMOUS), MYSURU
(AFFILIATED TO UNIVERSITY OF MYSORE & REACCREDITED BY NAAC WITH B⁺⁺ GRADE)

PROGRAMME: M.Sc in COMPUTER SCIENCE

CBCS with Learning Outcome Based Curriculum
Academic years: 2024-25

Mohd. D.

HOD
PG Dept. of Computer Science
St. Philomena's College
MYSORE-570 015



ST. PHILOMENA'S COLLEGE (AUTONOMOUS) MYSORE
(AFFILIATED TO UNIVERSITY OF MYSORE)
REACCREDITED BY NAAC
PROGRAMME: M.Sc COMPUTER SCIENCE
(For Candidates admitted during the Academic year 2024 onwards)

PREAMBLE

The M.Sc Computer Science Programme was started in the year 2014. The curriculum was revised regularly in the year 2016, 2018, 2019 and 2024. The present revision is the fourth one based on UGC guidelines 2018. It is designed to focus on outcome-based learning. It specifies Programme educational objectives (PEO's), Programme outcomes (PO's), Programme specific outcomes (PSO's), Course objectives (CO's) and Course learning outcomes (CLO's). The Programme specific outcomes are matched with Course learning outcomes and Cognitive domain levels. The innovation in teaching learning process with technology tools, active feedback of the course outcome from the stakeholders, continuous assessment evaluation rubrics, validity and reliability of evaluation makes the curriculum learners' centric.

The curriculum is designed with compulsory Hardcore courses and Skill enhancing, Interdisciplinary, Ability enhancing, Generic and Self-study as Soft-core electives. The students will acquire knowledge and skill to build learner competencies and become self-learners.

The students will have flexibility, academic mobility and maximum utilization of human and material resources.

The following modifications are incorporated in the revised syllabus from the academic year 2020-21 onwards

NEW COURSES INTRODUCED					
Sl.No	Sem	Type	Classification	Title	Credits
1	2	DSE	General Elective	Digital Image Processing	4
2	3	DSE	Ability Enhancement	Artificial Intelligence & Machine Learning	4

NEW SOFT-CORE INTERDISCIPLINARY COURSE OFFERED TO M.COM DEPT.

Sl.No	Semester	Title of the Paper	Type	Credits
1	First	Data Analytics	SC-IC	4

Third

MERGED TWO 2-CREDITS OPEN ELECTIVE COURSES TO A 4-CREDITS COURSE

Sl.No	Semester	Merged Courses	Title of the Paper	Type	Credits
1	Second	Information Technology and Office Automation – 1	Information Technology and Office Automation	SC-OE	4
		Information Technology and Office Automation – 2			
2	Third	Web Designing – 1	Web Designing	SC-OE	4
		Web Designing – 1			

COURSE CONTENT

Modules	Proposed Course Content	Duration
1.0	DATA WAREHOUSING: Overview, Definition, Data Warehousing Components, Building a Data Warehouse, Warehouse Database, Mapping the Data Warehouse to a Multiprocessor Architecture <i>Keyword: Understanding data warehousing</i>	08Hrs
2.0	ARCHITECTURE: Difference between Database System and Data Warehouse, Multi Dimensional Data Model, Data Cubes, Stars, Snow Flakes, Fact Constellations, Concept hierarchy, Process Architecture, 3 Tier Architecture <i>Keyword: Data warehousing Architecture</i>	08Hrs
3.0	DATA WAREHOUSE PROCESS AND TECHNOLOGY: Warehousing Strategy, Warehouse/management and Support Processes, Warehouse Planning and Implementation, Hardware and Operating Systems for Data Warehousing, Client/Server Computing Model & Data Warehousing. <i>Keywords: Analyzing data warehouse process</i>	08Hrs
4.0	PARALLEL PROCESSORS & CLUSTER SYSTEMS: Distributed DBMS implementations, Warehousing Software, Warehouse Schema Design, Data Extraction, Cleanup & Transformation Tools, Warehouse Metadata <i>Keyword: Analysing data warehousing methodologies</i>	08Hrs

Note: Course content involves Theory: 90% Problem: 10%

REFERENCES

Sl. No	Title of the book	Authors	Edition	Year of Publication
1	Data Warehousing, Data-Mining & OLAP"	Alex Berson, Stephen J. Smith	1st	2008
2	Data Warehousing: Architecture and Implementation	Mark Humphries, Michael W. Hawkins, Michelle C.	-	2006
3.	Data Mining: Introductory and Advanced Topics	Margaret H. Dunham, S Sridhar	3 rd	2001

Course Title	DATA ANALYTICS							
Course Type		Theory	48	64	Hours/Week	04	Credits	03+01
		Practical	16					
Course	Evaluation	Internal		C1+C2 = 15+15		30 Marks	100	

Code		External	Duration	C3	03Hrs	70 Marks
COURSE OBJECTIVES (COs)						
CO No.	Course Objectives On completion of the course the student will be able to					
CO-1	Understand the basic concepts and significance of Data Analytics					
CO-2	Build databases using Excel sheets					
CO-3	Apply the knowledge of data analytics on SQL tables					
CO-4	Understand the basic operations used in Python for Data Analytics					

Mapping of CLOs with PSOs & CDLs			
CLOs No.	Course Learning Outcomes (CLOs) On completion of the course the student will learn to	PSOs Addressed	CDLs
CLO-1	Gain basic knowledge on Data Analytics, its types & its visualisation.	PSO – 2,4	Understand
CLO-2	Become familiar with Excel sheets & charts to analyse the database	PSO -6, 9	Analyse
CLO-3	Familiarize with the basics of SQL queries for efficient data analysis	PSO – 2,3,6	Understand Analyse
CLO-4	Familiarize with the basics of Python & its operators	PSO – 3,4,7	Analyse Apply

COURSE CONTENT

Modules	Proposed Course Content	Duration
1.0	Introduction to Data Analytics Data Analytics Overview, Importance of Data Analytics, Types of Data Analytics, Descriptive Analytics, Diagnostic Analytics, Predictive Analytics, Prescriptive Analytics, Benefits of Data Analytics, Data Visualization for Decision Making, Data Types, Graphical Techniques.	12Hrs
2.0	Excel: Basics to Advanced Tables, Conditions, Sorting, Filtering, Formulas. Data Exploration, Excel for Charts, Types of charts, Histogram,	12Hrs
3.0	SQL Basic SQL Query, SELECT operator, INSERT, DELETE, UPDATE statements, JOIN operator, Types of JOIN operators, AGGREGATE values, SET operators, Sub Queries.	12Hrs
4.0	Python Basics The print statement, Comments, Python Data Structures & Data Types, String Operations in Python, Simple Input & Output, Simple Output Formatting, Deep copy, Shallow copy, Operators in python.	12Hrs

- 2.0 **DES** 10Hrs
 Symmetric ciphers-Block cipher principles; DES-Algorithm, strengths and weaknesses of DES, attacks on DES and defense,
Key words –understanding and implementing DES algorithm
- 2.1 multiple encryptions; Asymmetric ciphers-Essential mathematics, public key cryptography 06Hrs
Key words-understanding multiple encryptions and
- 3.0 **RSA AND DIGITAL SIGNATURE** 16Hrs
 RSA, Diffie Hellman key exchange, random number generation, Data integrity and authentication Hash functions; MAC; Digital signatures;
Key words-understanding RSA and digital signature
- 4.0 **NETWORK SECURITY** 16Hrs
 Key management; Authentication, Web and system security, Web security; IP security; E mail security; System security-intruders, malicious software, firewalls
Key words-understanding network security
Note: Course content involves Theory:70%, Problems: 30%

REFERENCES

Sl. No	Title of the book	Authors	Edition	Year of publication
1	Cryptography and Network Security - Principles and Practice,	William Stallings, PEARSON	4th	2006
2	Cryptography and Network Security,	AtulKahate, Tata McGraw Hill	4 th	2019

FIRST YEAR - SEMESTER – II

Course Title	DIGITAL IMAGE PROCESSING							
Course Type	DSE	Theory	64	64	Hours/Week	04	Credits	04
		Practical						
Course Code	Evaluation	Internal	C1+C2 = 15+15			30 Marks		100
		External	Duration	C3	03Hrs	70 Marks		
COURSE OBJECTIVES (COs)								
CO No.	Course Objectives On completion of the course the student will be able to							
CO-1	Understand the fundamentals of digital image processing							

CO-2	Learn the Image enhancement using spatial & frequency domains
CO-3	Understand the colour image & image compression models.
CO-4	Understanding Image segmentation, feature extraction & pattern classification.

Mapping of CLOs with PSOs & CDLs			
CLOs No.	Course Learning Outcomes (CLOs) On completion of the course the student will learn to	PSOs Addressed	CLDs
CLO-1	Understand the process, the needs & requirements of digital image processing	PSO – 2,3	Understand
CLO-2	Understand Image enhancement & filtering in time & frequency domains.	PSO – 3,6	Understand
CLO-3	Understand the technology behind colour images & image compression.	PSO – 6,7	Analyse
CLO-4	Understand the significance of feature extraction & image segmentation in the area of pattern classification.	PSO – 4,10	Apply

COURSE CONTENT

Modules	Proposed Course Content	Duration
1.0	Introduction: Introduction to Digital Image Processing, Examples of Fields that use Digital Image Processing, Fundamental steps in Digital Image Processing, Components of Image Processing System. Digital Image Fundamentals: Simple Image formation model, Image Sampling and Quantization, Some Basic Relationships Between Pixels.	16Hrs
2.0	Intensity Transformation & Spatial Filtering: Basics of Intensity Transformation & Spatial filtering, Basic Transformation functions, Histogram Processing, Smoothing & Sharpening in Spatial domain. Filtering in Frequency Domain: Image Smoothing & Image Sharpening in frequency domain.	16Hrs
3.0	Colour Image Processing: Colour Fundamentals, Colour Models, Pseudo colour image processing. Image Compression: Types of Redundancies, Image Compression models, Image Formats, Containers & Compression standards.	16Hrs
4.0	Image Segmentation: Point, line & edge detection, Thresholding, Region based segmentation. Feature Extraction: Boundary preprocessing, Feature descriptors. Image Pattern Classification: Pattern classes, Pattern classification by Prototype matching.	16Hrs

REFERENCES

Sl. No	Title of the book	Authors	Publisher	Edition	Year of publication
1	Digital Image Processing	Rafel C. Gonzalez and Richard E. Woods	Pearson Education	4th	2018

1	An Advanced Course in Database Systems 2008.	Dietrich, Urban	Pearson	-	2008
2	Fundamentals of Database Systems	Elmars, Navathe, Somayajuu, Gupta,	Pearson Education	4 th	2007
3	Database Systems, The complete book	Garcia, Ullman, Widom,	Pearson Education	-	2007.

SECOND YEAR - SEMESTER – III

ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING									
Course Title									
Course Type	DSE		Theory	64	64	Hours/Week	04	Credits	04
			Practical						
Course Code	Evaluation	Internal		C1+C2 = 15+15			30 Marks		100
		External		Duration	C3	03Hrs	70 Marks		
COURSE OBJECTIVES (COs)									
CO No.	Course Objectives								
	On completion of the course the student will be able to								
CO-1	Apply the knowledge of searching and reasoning techniques for different AI applications								
CO-2	Have a good understanding of machine learning and addressing the challenges of machine learning using linear regression methods								
CO-3	Apply the knowledge of classification & clustering algorithms on various dataset and compare results								
CO-4	Understand advanced algorithms & identifying the suitable algorithm for different problems								

Mapping of CLOs with PSOs & CDLs			
CLOs No.	Course Learning Outcomes (CLOs) On completion of the course the student will learn to	PSOs Addressed	CLDs
CLO-1	Gain a historical perspective of AI and its foundations	PSO – 2,4	Understand
CLO-2	Become familiar with basic principles of AI toward problem solving	PSO -6, 9	Analyse
CLO-3	Familiarize with the basics of Machine Learning & Machine Learning methods	PSO – 2,3,6	Understand Analyse
CLO-4	Identify the Machine Learning method to be used in order to solve specific problems.	PSO – 3,4,7	Analyse Apply

COURSE CONTENT

Modules	Proposed Course Content	Duration
1.0	Introduction: What is AI? Foundations and History of AI Problem-solving: Problem-solving agents, Example problems, Searching for	16Hrs

Solutions, Uninformed & Informed Search Strategies

- 2.0 Introduction to Machine Learning: Introduction to Analytics & Machine learning, Framework for developing ML models. 16Hrs
 Linear Regression: Simple Linear Regression, Steps & process of building Simple Linear Regression model, Model diagnostics.
- 3.0 Classification Problems: Binary Logistic Regression, Classification Tree. Clustering: How does clustering work, K-Means clustering, Hierarchical clustering 16Hrs
- 4.0 Advanced Machine Learning: Advanced Regression models, Logistic Regression model, KNN Algorithm, Random Forest. 16Hrs

REFERENCES				
Sl. No	Title of the book	Authors	Edition	Year of publication
1	Artificial Intelligence	Stuart J. Russell and Peter Norvig, Pearson	3rd	2015
2	Machine Learning using Python	Manaranjan Pradhan, U Dinesh Kumar, Wiley India Pvt. Ltd	1st	2019
3	Artificial Intelligence	Elaine Rich, Kevin Knight, Tata McGraw Hill	3rd	2013
4	Machine Learning	Tom Mitchell, McGrawHill Publication	1st	1997

SECOND YEAR - SEMESTER –III

MATLAB PROGRAMMING							
Course Title							
Course Type	DSE	Total Hours	32	Hours/Week	02	Credits	02
Course Code	Evaluation	Internal	C1+C2 = 15+15			30 Marks	100
		External	Duration	C3	03Hrs	70 Marks	
COURSE OBJECTIVES (COs)							
CO No.	Course Objectives						
	On completion of the course the student will be able						
CO-1	To understand fundamental concepts in graph theory, lattices, matrices and Boolean algebra;						
CO-2	To introduce MATLAB programming with few examples.						
Mapping of CLOs with PSOs & CDLs							
CLOs No.	Course Learning Outcomes(CLOs)			PSOs Addressed		CLDs	
	On completion of the course the student will learn to						

FIRST YEAR – SEMESTER - II

Course Title	INFORMATION TECHNOLOGY AND OFFICE AUTOMATION – 1						
Course Type	DSE- GE	Total Hours	64	Hours/Week	04	Credits	04
Course Code	Evaluation	Internal	C1+C2 = 15+15			30 Marks	
		External	Duration	C3	03Hrs	70 Marks	
COURSE OBJECTIVES (COs)							
CO No.	Course Objectives On completion of the course the student will be able						
CO-1	To understand the basic functionality of Computer.						
CO-2	To understand the concept of Operating System						
CO-3	To understand basic concept of data communication						
CO-4	To craft professional word documents, excel spread sheets, power point presentations using the Microsoft suit of office tools.						

Mapping of CLOs with PSOs &CDLs			
CLOs No.	Course Learning Outcomes(CLOs) On completion of the course the student will learn to	PSOs Addressed	CLDs
CLO- 1	Understand basic components, its functionality and working of computer	PSO-1	Understand
CLO-2	Understand concept of OS and application	PSO-4	Understand
CLO-3	Understand concept of Data Communication	PSO-8	Understand
CLO-4	Working in Excel spread sheets	PSO-4,5	Create

COURSE CONTENT

Modules	Proposed Course Content	Duration
1.0	INTRODUCTION TO COMPUTER: Types of Computers, Block Diagram of elements of digital computer-their functions, CPU. Keywords: Understanding different components of computer	08Hrs

SECONDARY MEMORY DEVICES: Secondary storages, Magnetic Tape, Disk, CD-ROM. Other recent developments -Scanners, Digitizer, Plotters.
 Different I/O devices.
Keywords:Understanding secondary storage devices **08Hrs**

2.0 OPERATING SYSTEM: Different Operating System, MS – DOS, Windows, UNIX, LINUX. **08Hrs**
Keywords: Understanding concepts of Operating systems.

COMPUTER SOFTWARE: Different application software (MS Paint, Notepad) **08Hrs**
Keywords: Understanding basic application software.

3.0 BASIC CONCEPT OF NETWORKING AND DATA COMMUNICATIONS: **08Hrs**
 Introduction to LAN, WAN, MAN and PAN, Introduction to data communication concepts.
Keywords: Understanding concept of data communication

INTERNET AND VIRUS: Introduction to internet, Concept of E-mail, Computer virus and its types, How to protect your computer from virus? **08 Hrs**
Keywords: Understanding Internet and Computer virus concept.

4.0 OFFICE APPLICATIONS: Introduction to MS OFFICE, Working with MS-Word. **08 Hrs**
Keywords: Understanding MS office package tool.

OFFICE APPLICATION: MS – Excel, MS – Power point presentation. **08Hrs**
Keywords: Understanding MS Excel and power point applications.

Note: Course Content contains Theory: 70%, Practical: 30%

REFERENCES

Sl. No	Title of the book	Authors	Edition	Year of publication
1	Computers Today	Sanders	3 rd	1990
2	Computers:	Trainor &Krasnewich	-	1989
3	Fundamentals of Computers	Rajaraman &NeeharikaAdabala	6 th	2015

SECOND YEAR – SEMESTER - III

Course Title	WEB DESIGNING
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Course Type	DSE – GE		Total Hours	64	Hours/Week	04	Credits	04
Course Code	Evaluation	Internal	C1+C2 = 15+15			30 Marks		100
		External	Duration	C3	03Hrs	70 Marks		
COURSE OBJECTIVES (COs)								
CO No.	Course Objectives							
	On completion of the course the student will be able							
CO-1	To have knowledge and skills to build creative, interactive and well-designed websites.							
CO-2	To have knowledge and skills to build Tables & HTML Forms.							
CO-3	To attempt to balance technical skills with artistic skills to create web pages that are visually pleasing using CSS.							
CO-4	To attempt to balance technical skills with artistic skills to create web pages that are dynamic using JavaScript.							

Mapping of CLOs with PSOs & CDLs			
CLOs No.	Course Learning Outcomes(CLOs) On completion of the course the student will learn to	PSOs Addressed	CLDs
CLO- 1	Employ fundamental computer theory to basic programming techniques	PSO-1	Understand
CLO-2	Create and manipulate web media objects	PSO-3	Create
CLO-3	Select and apply markup languages	PSO-6	Evaluate
CLO-4	Embedding CSS with HTML	PSO-7	Create
CLO-5	Validation with JavaScript	PSO-8	Create

COURSE CONTENT

Modules	Proposed Course Content	Duration
1.0	WEB PROGRAMMING INTRODUCTION: Architecture of a website, Different technologies in making the website, Web Development Introduction. <i>Keywords:</i> Understanding web designing	03Hrs
.1.1	HTML: HTML fundamental tags: HTML document structure, Using paragraph tags, Aligning paragraphs, block-level and inline tags, Controlling line breaks and spaces, Formatting text with phrase element tags, Formatting text with font markup elements <i>Keywords:</i> Understanding different concepts in HTML	05Hrs
1.2	FUNCTIONS: Adding document structure with headings, Formatting quotations and quote marks, Preserving pre-formatted text, Selecting a typeface, Selecting a type size, using ordered and n-ordered lists, Using inline images, Flowing text around an image, Breaking lines around an image <i>Keywords:</i> Working with different functions available in HTML	08Hrs


- 2.0 **WORKING WITH HYPERLINKS and TABLES:** 08Hrs
Using relative URLs, Specifying a base URL , Linking within a page using fragments, Creating image links, table tags, Aligning images with tables, frame tags, Hiding frame borders .inserting Graphics.
Keywords: Understanding and working with URLs and Tables
- 2.1 **HTML FORMS:** 08Hrs
Introduction to HTML Forms, working with different HTML form attributes.
Keywords: Creating a web form.
- 3.0 **INTRODUCTION TO CSS:** Benefits of CSS, CSS Versions History, CSS Syntax, Different style sheets. 08Hrs
Keywords: Understanding CSS
- 3.1 **CSS with HTML:** Styling web pages using inline, embedded and external CSS 08Hrs
Keywords: Creating web pages using CSS.
- 4.0 **INTRODUCTION TO JAVA SCRIPT:** Java Script, Client-side Java script, Advantage of Java script, limitation of java scripts, Java scripts development tool, Java script – syntax, Enabling, Variables and Operators. 08Hrs
Keywords: Understanding JavaScript.
- 4.1 **VALIDATION:** Java script – Decision making, Looping, using JS for validating and computing using functions, exception handling. 08Hrs
Keywords: Validating web forms using javascript.

Note: Course Content contains Theory: 80%, Practical: 20%

REFERENCES

Sl. No	Title of the book	Authors	Edition	Year of Publication
1	HTML programmers reference	Thomas a Powell / Dan Whitworth	2 nd	2001
2	HTML Introduction to web page design & Development	David mercer	-	2001
3	Magic with HTML, DHTML & JavaScript	Dr.Ravinder Singh AmitGupta	1 st	2009
4	HTML, XHTML, CSS and XML by Example A Practical Guide	TeodoruGugoiu	-	2007
5	Internet and its Applications with HTML & VB-Script	Prof. ShashiBanzal	1 st	2009

3	a	Module 1	15 Marks
	b	Module 1	
	c	Module 1	
OR			
4	a	Module 2	15 Marks
	b	Module 2	
	c	Module 2	
OR			
5	a	Module 2	15 Marks
	b	Module 2	
	c	Module 2	
OR			
6	a	Module 3	15 Marks
	b	Module 3	
	c	Module 3	
OR			
7	a	Module 3	15 Marks
	b	Module 3	
	c	Module 3	
OR			
8	a	Module 4	15 Marks
	b	Module 4	
	c	Module 4	
OR			
9	a	Module 4	15 Marks
	b	Module 4	
	c	Module 4	


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