ARULMIGU PALANIANDAVAR ARTS COLLEGE FOR WOMEN

(AUTONOMOUS)

Re-accredited with B++ by NAAC in 3rd cycle

(Run by Hindu Religious and Charitable Board under the Aegis of Arulmigu Dhandayuthapani Swamy Thirukovil, Palani)

(Affiliated to Mother Teresa Women's University, Kodaikanal)

Chinnakalayamputhur (PO), Palani 624 615.

Curriculum Framework and Syllabus for Outcome Based Education in

BACHELOR OF SCIENCE
(COMPUTER SCIENCE)

(PROGRAMME CODE: UGCSS)

(Based on the syllabus recommended by TANSCHE)

Degree Programme for the students admitted from the Academic year

2022-2023 Onwards

PG DEPARTMENT OF COMPUTER SCIENCE

INSTITUTIONAL VISION AND MISSION

VISION

- Enlightenment and Empowerment of Rural Women

MISSION

- To imbibe research activity and collaborative programs with our local communities.
- High quality teaching, providing learning environment with practical exposure.
- Encouragement of a questioning spirit and self-reliance.
- Strong and support education for the students employability

DEPARTMENT VISION AND MISSION

VISION

- Employing women in the field of Information Technology.
- Molding rural women into Future Leaders.

MISSION

- Training students in latest trends in IT Field.
- Motivating students to organize IT related competitions.
- Conducting special lectures for the students to advance the state of the art in computer science and IT Field.
- Training students to do projects in recent technologies.

B.SC (COMPUTER SCIENCE)

REGULATIONS

1. Preamble

B.Sc Computer Science is a broad and flexible degree programme introduced in 1998 as self supporting department with the curriculum specifically designed to reflect the depth and breadth of computer science. To encourage young rural women students to adopt higher education, M.Sc Computer Science programme is added in the department in 2005. Expert members from Academia and Industry provide inputs in introducing specialized courses in the curriculum to suit industry needs. To further enhance the quality of the programme, the department adheres Outcome Based Education (OBE) 2019-2020 onwards.

2. Eligibility for Admission

- Candidate should have passed the Higher Secondary Examination conducted by the board of syndicate as equivalent there to with Mathematics.

3. Duration of the course

- The students will undergo the prescribed course of study for a period of not less than three academic years (Six semesters).

4. Medium of Instruction:

- English

5. General Frame work:

- Course Study: Part I, II, III, IV, V subjects.

6. Eligibility of the degree:

- Candidates will be eligible, if they complete the course with the required credits and pass in the prescribed examinations.
- The candidate requires 75% of attendance to attend the end semester examination.

- Two internal tests will be conducted and the average of two tests will be considered for the internal mark consolidation.
- To get Graduation, the students should gain minimum 140 credits.

7. Evaluation

Pattern of Evaluation

	Int.	Ext.	Total
Theory	25	75	100
Practical	40	60	100
Project	40	60	100

Internal Assessment Components

Theory(25 Marks)

Test	-	15
Assignment	-	5
Seminar	-	5

		25
		---

8. Content Delivery Methods

1. Lecture method
2. Group Discussion
3. ICT

9. Passing Rules

- 75% of marks are allotted for external evaluation and 25% of the marks are allotted for internal evaluation in each of the theory subjects
- 60% of marks are allotted for external evaluation and 40% of the marks are allotted for internal evaluation in each of the practical subjects.
- For each courses there will be Continuous Internal Assessment (CIA) and Final Semester Examination.
- For each paper, passing minimum is 40% in both internal and external

10. Pattern of the Question Paper (External)

BLOOM'S TAXONOMY BASED ASSESSMENT PATTERN

K1-Knowledge; **K2**- Comprehend; **K3**- Applications; **K4**-Analysis; **K5**- Synthesis; **K6**-Evaluation

1. PART I, II, III

External Question Pattern: Theory – 75 Marks (3 Hours)

Bloom's Category	Section	Marks	Course Outcomes	Description	Total
K1,K2	A (Answer All) Two Questions from each unit	10*1=10	CO1 & CO2	One word/ Short Answers	**75**
K3 & K4	B (Either or Choice) One Questions from each unit	5*5 = 25	CO2 & CO3	Descriptive / Detailed	
K3, K4, K5 & K6	C (Answer 5 out of 8)	5*8 = 40	CO3,CO4 & CO5	Descriptive / Detailed	

Internal Question Pattern (30 Marks – 2 Hours Test)

(Converted into 15 Marks)

Bloom's Category	Section	Marks	Course Outcomes	Description	Total
K1,K2	A (Answer All)	6*1=6	CO1 & CO2	One word/ Short Answers	**30** (Converted into 15 Marks)
K3,K4	B (Answer 2 out of 4)	2* 4 = 8	CO2 & CO3	Descriptive / Detailed	
K3, K4, K5 & K6	C (Answer 2 out of 4)	2*8 = 16	CO3,CO4 & CO5	Descriptive / Detailed	

PART IV (SBC & NME) – External (75 Marks – 3 Hours)

Bloom's Category	Section	Marks	Course Outcomes	Description	Total
K1,K2	A(Answer 5 out of 8)	5*3=15	CO1 & CO2	Short Answers	**75**
K3,K4	B(Answer 5 out of 8)	5*6=30	CO2 & CO3	Descriptive/Detailed	
K3, K4, K5 & K6	C(Answer 3 out of 5)	3*10=30	CO3,CO4 & CO5	Descriptive/Detailed	

PART IV (SBC & NME) – Internal (15 Marks – 1 Hour)

Bloom's Category	Section	Marks	Course Outcomes	Description	Total
K1,K2	A (Answer 2 out of 4)	2*2 = 4	CO1 & CO2	Short Answers	**15**
K3,K4	B(Answer 1 out of 2)	1*4 = 4	CO2 & CO3	Descriptive / Detailed	
K3, K4, K5 & K6	C(Answer 1 out of 2)	1*7 = 7	CO3,CO4 & CO5	Descriptive / Detailed	

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(Run by Arulmigu Dhandayuthapani Swami Thirukovil, H.R & C.E (Admin) Dept. Govt. of Tamilnadu)
A Government Aided College - Affiliated to Mother Teresa Women's University,Kodaikanal)
Chinnakalyamputhur, **Palani** -624 615.

Curriculum Framework and syllabus for Outcome Based Education in Bachelor of Science (Computer Science)
(For the students Admitted from the Academic year 2022-2023)

BOARD OF STUDIES MEETING HELD ON 11.05.2022

UNIVERSITY NOMINEE

Dr.(Mrs) S.VIMALA,
Associate Professor,
Department of Computer Science,
Mother Teresa Women's University,
Attuvampatty,
Kodaikanal – 624 101.
Contact No. : 9444690081

11/5/2022

SUBJECT EXPERTS

Dr. M. DEEPAMALAR,
Associate Professor & Head,
Department of Computer Science,
Parvathy's Arts and Science College,
Winsdom City, Madurai Road,
Begampur (PO), Dindigul 624 002.
Contact No. : 8270909398

11/5/22

Dr. K.R.ANANTH,
Associate Professor & Head,
School of Computer Science,
VET Institute of Arts and Science College (Co-Ed),
Thindal, Erode-12.
Contact No. : 9965812134

11/5/22

HOD 11/5/2022 **DEAN** 11.5.22 **PRINCIPAL** 11/5/22

SEMESTER-WISE DISTRIBUTION OF COURSES WITH

SCHEME OF VALUATION

UNDER CBCS PATTERN

OUTCOME BASED EDUCATION (OBE)

Part	Sub. Code	Title of Paper	Hours	Marks			Credits	Exam (H)
				INT	EXT	TOT		
		SEMESTER I						
PART I	AUGT1	Tamil	6	25	75	100	3	3
PART II	AUGE1	English	6	25	75	100	3	3
PART III	AUCSC1	**Core I:** Programming in C	5	25	75	100	5	3
	AUCSL1	**Core II: Practical –I :** Programming in C	5	40	60	100	3	3
	AUCSA1	**Allied I:** Discrete Mathematics	5	25	75	100	5	3
PART IV	AUCSOA1	**Skill Based Course-I :** Office Automation Lab	2	40	60	100	2	3
	AUVE	Value Education – Yoga	1	25	75	100	2	3
		TOTAL	**30**			**700**	**23**	
		SEMESTER II						
PART I	AUGT2	Tamil	6	25	75	100	3	3
PART II	AUGE2	English	6	25	75	100	3	3
PART III	AUCSC2	**Core III:** Data Structures with C++	6	25	75	100	5	3
	AUCSL2	**Core IV: Practical –II**: Data Structures using C++	5	40	60	100	3	3
	AUCSA2	**Allied II:** Statistical Methods	5	25	75	100	5	3
PART IV	AUCSWT2	**Skill Based Course II:** Web Technology Lab	2	40	60	100	2	3
		TOTAL	**30**			**600**	**21**	

	SEMESTER III							
PART III	**AUCSC3**	**Core V:** Java Programming	5	25	75	100	4	3
	AUCSC4	**Core VI:** Computer Organization	6	25	75	100	4	3
	AUCSC5	**Core VII:** Fundamentals of Digital Principles	5	25	75	100	4	3
	AUCSL3	**Core VIII: Practical -III** Java Programming	5	40	60	100	3	3
	AUCSAL4	**Allied III:** R Programming Lab	5	40	60	100	5	3
PART IV	**AUCSID3**	**Skill Based Course III:** Image Designing Lab	2	40	60	100	2	3
	AUCSN1	**Non Major Elective I:** Basics of Computers	2	25	75	100	2	3
		TOTAL	**30**			**700**	**24**	
	SEMESTER IV							
PART III	**AUCSC6**	**Core IX:** Python Programming	6	25	75	100	5	3
	AUCSC7	**Core X:** Operating System	5	25	75	100	5	3
	AUCSL5	**Core XI: Practical –IV:** Python Programming	6	40	60	100	3	3
	AUCSL6	**Core XII: Practical –V**: MATLAB	6	40	60	100	3	3
	AUCSA4	**Allied IV:** Operation Research	5	25	75	100	5	3
PART IV	**AUCSIT4**	**Skill Based Course -IV:** Internet of Things	2	25	75	100	2	3
PART V	**AUEXA4**	Extension Activities	-	-	-	100	1	
		TOTAL	**30**			**700**	**24**	

	SEMESTER V							
PART III	**AUCSC8**	**Core XIII:** Relational Database Management System	6	25	75	100	5	3
	AUCSL7	**Core XIV: Practical -VI:** Dot Net Programming	5	40	60	100	4	3
	AUCSL8	**Core XV: Practical –VII:** Relational Database Management System	5	40	60	100	3	3
	AUCSE1	**Elective I** 1. Computer Graphics 2. Fundamentals of Digital Image Processing	6	25	75	100	5	3
	AUCSE2	**Elective II** 1. Data Mining Techniques 2. Information Security	6	25	75	100	5	3
PART IV	**AUCSNA5**	**Skill Based Course V:** Numerical Aptitude	2	25	75	100	2	3
		TOTAL	**30**			**600**	**24**	
	SEMESTER VI							
PART III	**AUCSC9**	**Core XVI:** Computer Networks	6	25	75	100	4	3
	AUCSC10	**Core XVII:** Software Engineering	5	25	75	100	4	3
	AUCSPR	**Core XVIII:** Project Work	7	40	60	100	5	3
	AUCSE3	**Elective III** 1. Big Data Analytics 2. Cloud Computing 3. MOOC Online Course	6	25	75	100	5	3
PART IV	**AUCSTI6**	**Skill Based Course VI:** Trends in Information Technology	2	25	75	100	2	3
	AUES6	Environmental Studies	2	25	75	100	2	3
	AUCSN2	**Non Major Elective II:** Computer for Digital Era	2	25	75	100	2	3
		Total	**30**			**700**	**24**	

EXTRA CREDIT PAPERS:

S. No	Subject	Subject Code	Semester	Marks	Credits
1.	Green Computing	**UGEGC**	**I**	**100**	**2**
2.	Tally Lab	**UGET**	**III**	**100**	**2**
3.	Multimedia and its Applications	**UGEMA**	**V**	**100**	**2**

VALUE ADDED COURSES:

S. No	Subject	Subject Code	Semester	Marks
1.	Hardware and Troubleshooting	**AUCSHT**	**II**	**100**
2.	Application Development in Programming Languages	**AUCSADPL**	**IV**	**100**
3.	Computer for Digital Era	**AUCSCDE**	**VI**	**100**

LIST OF SKILL BASED COURSES

1. **Semester I** - Office Automation Lab
2. **Semester II** - Web Technology Lab
3. **Semester III** - Image Designing Lab
4. **Semester IV** - Internet of Things
5. **Semester V** - Numerical Aptitude
6. **Semester VI** - Trends in Information Technology

LIST OF ALLIED PAPERS

1. **Semester I** **Allied I** - Discrete Mathematics
2. **Semester II** **Allied II** - Statistical Methods
3. **Semester III** **Allied III** - R Programming Lab
4. **Semester IV** **Allied IV** - Operation Research

LIST OF ELECTIVE PAPERS

SEMESTER V:

ELECTIVE I:

1. Computer Graphics (or)
2. Fundamentals of Digital Image Processing

ELECTIVE II:

1. Data Mining Techniques (or)
2. Information Security

SEMESTER VI:

ELECTIVE III:

1. Big Data Analytics (or)
2. Cloud Computing
3. MOOC Online Course

LIST OF NME PAPERS

1. Semester III **:** Basics of Computers

2. Semester VI **:** Computer for Digital Era

CORE PAPERS

❖ **Theory Papers**

1.	**Core I**	Programming in C
2.	**Core III**	Data Structures with C++
3.	**Core V**	Java Programming
4.	**Core VI**	Computer Organization
5.	**Core VII**	Fundamentals of Digital Principles
6.	**Core IX**	Python Programming
7.	**Core X**	Operating System
8.	**Core XIII**	Relational Database Management System
9.	**Core XVI**	Computer Networks
10.	**Core XVII**	Software Engineering

❖ **Practical papers**

1. **Core II** **Practical - I** Programming in C
2. **Core IV** **Practical - II** Data Structures using C++
3. **Core VIII** **Practical - III** Java Programming
4. **Core XI** **Practical - IV** Python Programming
5. **Core XII** **Practical - V** MATLAB
6. **Core XIV** **Practical - VI** Dot Net Programming
7. **Core XV** **Practical - VII** Relational Database Management System

❖ **Project**

1. **Core XVIII : Project Work**

DISTRIBUTION OF CORE, ALLIED, ELECTIVE, NME AND SBC

PART I	Curriculum Structure	No. of Courses	Credits
I	**Languages**	02	06
II	**English**	02	06
III	**Core Papers**	18 **(10 Theory + 7 Lab + 1 Project)**	72
	Allied Courses	04	20
	Core Elective	03	15
IV	**Non-Major Elective**	02	04
	Value Based Course	02	04
	Skill Based Course	06	12
V	**Extension Activities**	01	01
Total		**40**	**140**

TOTAL MARKS : 4000

OUTCOME BASED EDUCATION

"Outcome-Based Education" (OBE) is considered as a student-centered instruction model that focuses on measuring student performance through outcomes. Outcomes include knowledge, skills and attitudes. In the OBE model, the required knowledge and skill sets for a particular degree is predetermined and the students are evaluated for all the required parameters (Outcomes) during the course of the program.

Part – I: Languages: Part – 1 comprises of category namely Tamil

Part – II: English: Part – 2 comprises of the category namely English

Part – III: Core Courses: A set of ***major papers*** that include Theory, Practical, Allied, Core Electives, Project and Internship in the major field of study selected by the student. Core courses are mandatory in nature.

Part – IV: Non - Major Electives (NME): A set of Non – Major Elective Courses are offered as choices of the students, outside of their major discipline. The courses other than the core and allied shall be opted by the students as Non – Major Elective.

Value Based Courses (VBC): Courses of cross-cutting issues relevant to the current pressing concerns both nationally and internationally such as environment and human values.

Skill Based Courses (SBC): The courses offered as Skill - Based courses under Part IV of the programme is aimed at imparting Advanced Skill of the programme. This comprises of six courses from 1st to 6th semesters.

Part – V: Extension Activities: Students shall be actively participated in the extension activities**.**

PROGRAM EDUCATIONAL OBJECTIVES

After few years from the completion of B.Sc programme, the students will be able to

PEO1	Our graduates will be academic, digital and information literates, creative, inquisitive, innovative and desirous for the "more" in all aspects.
PEO2	Graduates are trained to be employed in private and public sectors of IT industries by having the necessary core concepts of computer science.
PEO3	Graduates are given practice in career and entrepreneurial skill development domains to become efficient women entrepreneur.
PEO4	They will engage locally and globally evincing social and environmental stewardship demonstrating civic responsibilities and employing right skills at the right moment.
PEO5	Actively involved in social and professional service at local, national, and global levels.

PROGRAMME OUTCOMES

Upon successful completion of the programme, the student will able to

PO1	Apply acquired scientific knowledge to solve complex issues.
PO2	Able to survive in today's interconnected world with the knowledge earned through critical thinking and fundamental core concepts.
PO3	Become women entrepreneur such as web designer, database developer, programmer and multimedia designer.
PO4	Providing hands-on –training in state- of- the art technologies to design and implement software applications for social, economic, health, safety and ethical issues.
PO5	Have sufficient knowledge in hardware and software to meet the current industry requirements.

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PROGRAMME SPECIFIC OUTCOMES

Graduate with a B.Sc. in Computer Science will have the ability to

PSO1	Apply computational techniques and software principles for designing of software systems.
PSO2	Accomplish the ability to design and develop computer applications for real world problems
PSO3	Able to create platforms to become an entrepreneur and a relish for higher studies such as M.C.A., M.Sc., etc.,
PSO4	Apply standard Computer science practices and strategies in real-time software project development.
PSO5	An ability to apply mathematical methodologies to solve computation task, model, real world problem using appropriate data structure and suitable algorithm.
PSO6	Develop efficient and effective software systems using modern computer techniques.

MAPPING INSTITUTION MISSION WITH PROGRAMME EDUCATIONAL OBJECTIVITIES

MAPPING				
	IO1	**IO2**	**IO3**	**IO4**
PEO1		*		*
PEO2	*			*
PEO3		*		
PEO4			*	*
PEO5	*			

CORE I
AUCSC1 - PROGRAMMING IN C

Hours : 5 **Credits : 5**
Semester : I

Preamble

This course helps the students to learn C Programming language and develop programming skills in writing simple programs.

Course Outcomes

On successful completion of the course, the students will be able to

CO	Description of COs	Blooms' Taxonomy Level
CO1	Recall and understand the fundamentals of C programming. To acquire the programming logic, use of program instruction, syntax and programming structure.	Knowledge (Level K1)
CO2	To acquire the programming logic, use of program instruction, syntax and programming structure.	Comprehension (Level K2)
CO3	Understand the concepts of decision making, branching and looping	Knowledge (Level K1) Comprehension(Level K2)
CO4	Implement different operations on arrays and functions to solve the problem	Application (Level K3)
CO5	Execute file operations to preserve data in physical disk.	Application(Level K3)

COURSE CONTENT

UNIT – I:

History of C – Basic Structure of C Programs – Character Set –C Tokens – Keywords and Identifiers – Constants and Variables – Data Types – Storage Class - Operators and Expressions.

UNIT - II:

Managing Input and Output Operations - Decision Making and Branching: IF statement – Simple IF Statement-The IF….ELSE Statements - Nesting of IF…..ELSE Statements – The Switch Statement – The? : Operator - The GOTO Statement – **Decision Making and Looping** – The WHILE Statement – The DO Statement – The FOR Statement-Jumps in LOOPS.

UNIT - III:

Arrays: One-dimensional Arrays – Two-dimensional Arrays – Multi-dimensional Arrays – Character Arrays and Strings.

User -defined Function: Elements of user defined functions – definition of functions –function calls – Functions declaration – category of functions - Nesting of functions – Passing arrays to functions – Scope, visibility and life time of variables.

UNIT - IV:

Structures: Defining a Structure – Declaring Structure variables – Accessing structure members – structure initialization – copying and comparing Structure Variables- Arrays of structure – Arrays within structure – Structure within structure.

Union: Introduction- size of structure – Bit fields.

Pointers: Accessing the address of a variable – declaration – initialization – accessing a variable through its pointer – pointer expression – pointers & characters string – Array of pointers – Pointers as functions arguments – pointers and Structures.

UNIT - V:

File Management : Introduction – Defining and Opening a File – Closing a File – Input / Output Operations on Files - Error Handling During I/O Operation – Random Access to Files – Command Line Arguments.

TEXT BOOK

- E.Balagurusamy, *Programming in ANSI 'C'*, Eighth Edition, Tata McGraw – Hill Publishing Company, 2019.

REFERENCE BOOK

- Yashwanth Kanetkar , *"Let us C"* , BPB Publication, 14th Edition, 2021.
- Byron Gottfried - Programming with C - Tata McGraw Hill, 3rd Edition, 2013.
- V.Rajaraman - Computer Programming in C - Prentice Hall of India Pvt. Ltd,1st Edition, 2004.
- SmarajitGhosh - Programming in C - Prentice Hall of India Pvt. Ltd.,1st Edition, 2004.

WEBLIOGRAPHY

- https://onlinecourses.nptel.ac.in/noc22_cs40/preview
- https://onlinecourses.nptel.ac.in/noc20_cs91/preview
- www.tutorialspoint.com
- www.fresh2fresh.com
- www.cprogramming.com
- www.spoken-tutorial.org

Mapping					
	PO1	**PO2**	**PO3**	**PO4**	**PO5**
CO1	H	H	H	H	H
CO2	H	H	H	H	H
CO3	H	H	H	L	H
CO4	H	H	H	H	H
CO5	M	H	M	H	H

H-High; M-Medium; L-Low

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CORE II PRACTICAL - I

AUCSL1 - PROGRAMMING IN C

Hours : 5 **Credits : 3**
Semester : I

Preamble

These courses provide exposure to problem-solving through programming and train the students to the basic concepts of the C-Programming Languages.

Course Outcomes

On successful completion of the course, the students will be able to

CO	Description of COs	Blooms' Taxonomy Level
CO1	Read and understand the execution of programs written in C language.	Knowledge (Level K1)
CO2	Trace the execution of programs written in C language.	Comprehension (Level K2)
CO3	Implement various concepts in C.	Application(Level K3)
CO4	Implement programs with pointers and arrays, perform pointer arithmetic and use the pre-processor.	Application(Level K3)
CO5	Write the C code for a given algorithm.	Analysis(Level K4) Synthesis (Level K5)

PROGRAM LIST

- To find the Sum of individual Digits.
- To reverse a given Digit.
- Prime Number Series.
- Armstrong Number Series.
- Matrix Manipulation and Transpose of a Matrix.
- Palindrome using String.
- String Concatenation, Comparison and Length.

- Count number of words, character and lines in a sentence.
- Standard deviation ,Mean
- Fibonacci using Recursion.
- Swapping of numbers using Pointers.
- To prepare student Mark List using Structures.
- To prepare Electricity Bill using Files.

WEBLIOGRAPHY

- https://www.edx.org/course/c-programming-getting-started
- www.tutorialspoint.com
- www.fresh2fresh.com
- www.cprogramming.com
- www.spoken-tutorial.org

Mapping					
	PO1	**PO2**	**PO3**	**PO4**	**PO5**
CO1	H	M	M	H	H
CO2	H	H	H	H	M
CO3	M	H	H	M	H
CO4	H	M	H	H	L
CO5	H	H	M	M	H

H-High; M-Medium; L-Low

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ALLIED I
AUCSA1 - DISCRETE MATHEMATICS

Hours : 5 **Credits : 5**
Semester : I

Preamble

This course helps the students to obtain the knowledge on Matrices, Polynomial equations, Trigonometry, set theory and Graph Theory.

Course Outcomes

On successful completion of the course, the students will be able to

CO	Description of COs	Blooms' Taxonomy Level
CO1	Recall the basic concepts of Mathematics.	Knowledge (Level K1)
CO2	Impart different kinds of Matrices, Equations, Sets, Relations and Graphs.	Knowledge (Level K1)
CO3	Comprehend different kinds of Matrices, Equations, Sets, Relations and Graphs.	Comprehension (Level K2)
CO4	Solve the equations to find the roots.	Comprehension (Level K2) Application (Level K3)
CO5	Analyze the real world problems using Graph Theory.	Analysis (Level K4)

(80% Problems & 20% Theory)

COURSE CONTENT

UNIT - I:

Matrices: Introduction- Rank of matrix- Consistency of Equation- Cayley Hamilton Theorem- Eigen Values and Eigen Vectors.

UNIT - II:

Theory of Equations: Introduction- Imaginary and Irrational Roots- Relation Between Roots and coefficients of the Polynomial Equation- Transformation of Equations by Diminishing or Increasing its Roots- Finding Approximate Roots by Newton's Method.

UNIT - III:

Trigonometry: Expansion of $\sin n\theta$ and $\cos n\theta$ in terms of powers of cosine and sine- Expansion of $sin^n\theta$ and $cos^n\theta$- Expansion of $\sin\theta$ and $\cos\theta$ in terms of powers of θ-Hyperbolic Functions- Inverse Hyperbolic Functions.

UNIT - IV:

Set Theory: Introduction-Basic concepts and Notations- Ordered pairs and Cartesian product-Set operations.

UNIT - V:

Graph Theory: Introduction- Definitions- Degree of a Vertex-Some special simple graphs-Matrix representation of graphs-Paths, Cycles and connectivity.

TEXT BOOKS

- A Abdul Rasheed, *Allied Mathematics* – Reprint 2008**.(UNIT I,II,III)**
- T.Veerarajan, *Discrete Mathematics,* -Reprint 2015**.(UNIT VI,V)**

REFERENCE BOOK

- P.Kandasamy and K.Thilagavathy, Allied Mathematics Paper I ,-Reprint 2013.

WEBLIOGRAPHY

- https://onlinecourses.nptel.ac.in/noc22_cs04/preview
- https://onlinecourses.nptel.ac.in/noc21_cs36/preview
- http://discrete.openmathbook .org/
- http://math.oscarlevin.com/
- http://www.researchgate.net
- http://www.cs.uh.edu

Mapping					
	PO1	**PO2**	**PO3**	**PO4**	**PO5**
CO1	H	M	L	H	L
CO2	H	H	M	H	H
CO3	M	H	L	H	M
CO4	H	H	M	H	H
CO5	H	H	M	H	H

H-High; M-Medium; L-Low

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SKILL BASED COURSE - I

AUCSOA1 - OFFICE AUTOMATION LAB

Hours : 2 **Credits : 2**
Semester : I

Preamble

This course imparts the skills on application of MS-Office Packages and it provides hands-on use of Microsoft Office applications like Word, Excel, Access and PowerPoint.

Course Outcomes

On successful completion of the course, the students will be able to

CO	Description of COs	Blooms' Taxonomy Level
CO1	Understand the dynamics of an office environment.	Comprehension (Level K2)
CO2	Use various Office Automation Tools like MS Word, MS Excel, MS Access & MS PowerPoint	Comprehension (Level K2)
CO3	Design various Office Automation Tools like MS Word, MS Excel & MS PowerPoint	Application (Level K3)
CO4	The ability to apply application software in an office environment	Application (Level K3)
CO5	The ability to implement applications in an office environment	Comprehension(Level K2)

PROGRAM LIST

1. **Format the document using**
   i. Bulleted & Numbered List
   ii. Adding Headers and Footers
   iii. Find and Replace the word.

2. Create a Business Letter using Mail Merge concept.

3 Create a document News Paper format in MS-word.

4 Create a worksheet to

i. Find, delete and add records,

ii. Formatting columns, row height, merging, splitting columns.

iii. Sort the contents in ascending and descending order

5 Create the worksheet in MS-EXCEL to store the following information:

Reg. no, Name, Mark1 , Mark2, Mark3 , Total Average

a) Using formula and function find the total, average, maximum, minimum total marks

b) Create the bar chart for average mark with proper title for axes, legend and gridlines.

6 Create, display and interact with data using Pivot Tables and Pivot Charts of excel feature.

7 Create 3 slides for a Seminar Lecture on introduction to computer and do the following

(a) Numbering the Slides

(b) Moving the Frames and Inserting Clipart

(c) Inserting New Slide

(d) Deleting Slide

(e) Copying a Slide.

8 Create 5 Slide presentation of your own and do the following

(a) Inserting Pictures

(b) Copying picture form previous slide

(c) Copying text from previous slide

9 Create a MS-Access table for Employee details

WEBLIOGRAPHY

- http://www.edx.org
- http://edu.gcfglobol.org/en/subjects/office
- http://www.tutorialspoint.com
- https://office.live.com

Mapping					
	PO1	**PO2**	**PO3**	**PO4**	**PO5**
CO1	M	H	L	H	H
CO2	H	M	H	M	H
CO3	H	H	L	H	M
CO4	M	H	M	H	H
CO5	H	H	H	M	H

H-High; M-Medium; L-Low

****

CORE III

AUCSC2 - DATA STRUCTURES WITH C++

Hours : 6 **Credits : 5**
Semester : II

Preamble

This course provides understanding of classes, objects, constructors, destructors, and control structures and imparts knowledge about data structures including linked list, stacks & queues and binary trees.

Course Outcomes

On successful completion of the course, the students will be able to

CO	Description of COs	Blooms' Taxonomy Level
CO1	Get an idea about object oriented paradigm with concepts of streams, classes, functions, data and objects and also recollect the concepts of files.	Knowledge (Level K1)
CO2	Classify difference between object oriented programming and procedural oriented language and data types in C++.	Knowledge (Level K1) Comprehension (Level K2)
CO3	Apply dynamic memory management techniques using pointers, constructors, destructors, etc	Application (Level K3)
CO4	Recognize fundamental concepts of Data structures, space complexity and time complexity.	Application (Level K3)
CO5	Understand linear data structures such as stacks, queues, linked list and non linear data structures such as trees and Graphs.	Analysis (Level K4) Synthesis(Level K5)

COURSE CONTENT

UNIT-I:

Classes and Objects: Specifying a class Defining Member functions- A C++ Program with Class-Making an Outside function Inline – Nesting of Member Function - Memory allocation for

objects- Static Data Members & Member Functions - Array of Objects - Friendly functions – **Functions:** Function Prototyping – Call by reference – Recursion – Function Overloading. Constructors and Destructors: Constructors- Parameterized Constructors- Multiple Constructors in Class- copy constructors- Destructors.

UNIT - II:

Operator Overloading & Inheritance: Defining operator overloading - Overloading unary operators-Overloading binary operators-using friend function -manipulation of strings using operators-rules for overloading operators- Extending Classes: Introduction- Defining derived classes-single inheritance- Multiple Inheritance-Multilevel Inheritance-Hierarchical inheritance- Hybrid Inheritance - Virtual Base classes- Abstract Classes- Constructor in Derived Classes- Member Classes: Nesting of Classes.

UNIT - III:

Pointers: Pointers to Objects – This Pointers – Pointers to Derived Class - Virtual Functions-Pure virtual function - Virtual Constructors and Destructors. **DATA STRUCTURES:** Introduction to Data Structures – Types of Data Structures - Data Structures Operations.

UNIT-IV:

Stack – Stack Operations – Stack Implementation – Queue – Basic Concepts –**Queue** Operations –Queue Implementations - Circular queues –Priority Queue – Double Ended Queues. **Linked List** –Basic Concepts – Linked List Implementation – Types of Linked List- Circular Linked List – Doubly Linked List.

UNIT-V:

Trees: Basic Concepts - Binary trees – Binary Tree Representation - Binary tree Traversal - Sorting Techniques – Searching Techniques.

TEXT BOOK

- Balagurusamy. E, *Object Oriented Programming and Data Structures*, Tata McGraw-Hill Education, 2015. Chapters 4, 6, 5, 7, 8, 9, 10, 12, 13, 14, 15, 17.

REFERENCE BOOKS

- Dewhurst, Stephen C, and Kathy T. Stark, *Programming in C++*. Prentice-Hall, Inc., 1989.
- Lafore, Robert, *Object-oriented programming in Turbo C++,* Galgotia publications, 2001.
- Allen, Weiss Mark, *Data structures and algorithm analysis in C++*, Pearson Education India, 2007.

WEBLIOGRAPHY

- https://onlinecourses.nptel.ac.in/noc22_cs42/preview
- https://onlinecourses.nptel.ac.in/noc22_cs43/preview
- http://www.geeksforgeeks.org
- http://www.learncpp.com
- http://www.codeacademy.com
- http://www.programiz.com
- http://www.toptel.com
- https://www.tutorialspoint.com/data_structures_algorithms/index.htm
- https://www.w3schools.in/data-structures-tutorial/intro/
- https://www.tutorialspoint.com/cplusplus/index.htm

Mapping					
	PO1	**PO2**	**PO3**	**PO4**	**PO5**
CO1	H	H	L	M	H
CO2	M	M	M	H	H
CO3	H	H	L	H	M
CO4	H	H	M	H	H
CO5	H	M	H	H	H

H-High; M-Medium; L-Low

****

CORE IV PRACTICAL - II

AUCSL2 - DATA STRUCTURES USING C++

Hours : 5 **Credits : 3**
Semester : II

Preamble

This course provides practical knowledge about the classes, objects, constructors, destructors, control structures and also imparts practical knowledge about data structures including linked list, stacks & queues and binary trees.

Course Outcomes

On successful completion of the course, the students will be able to

CO	Description of COs	Blooms' Taxonomy Level
CO1	Understand Object oriented features and C++ concepts.	Comprehension (Level K2)
CO2	Apply Object oriented features and C++ concepts.	Application (Level K3)
CO3	Practice to solve the real world problems.	Application (Level K3)
CO4	Apply to solve the real world problems.	Application (Level K3)
CO5	Experiment various data structure concepts using C++.	Analysis (Level K4)

PROGRAM LIST

- Print the Student Name, Register Number, Marks, Total and Average using Array Of Objects.
- Sum of the given numbers using Function Overloading
  - Two Integer Values
  - Three Integer Values
  - Two double Values
- Banking Operations using Constructors and destructors.
- Sum of the two values using '+' operator overloading using

  a. Two integer values. b. Two floating values

- Find the Arithmetic operations using Inline function.
- Write a C++ program to apply single inheritance and assume the fields by your own.
- Write a C++ program to apply multiple inheritances and assume the fields by your own.
- Program for Stack Implementation
- Program for Queue Implementation
- Program for Linked List Implementation
- Program for Binary Tree traversal
- Program for Sorting Numbers

WEBLIOGRAPHY

- https://www.edx.org/course/introduction-to-programming-in-cpp
- http://www.geeksforgeeks.org
- http://www.learncpp.com
- http://www.codeacademy.com
- http://www.programiz.com
- http://www.toptel.com
- https://www.tutorialspoint.com/data_structures_algorithms/index.htm
- https://www.w3schools.in/data-structures-tutorial/intro/
- https://www.tutorialspoint.com/cplusplus/index.htm

Mapping					
	PO1	**PO2**	**PO3**	**PO4**	**PO5**
CO1	H	H	L	M	H
CO2	H	M	M	L	H
CO3	H	H	L	H	M
CO4	H	H	M	H	H
CO5	H	H	M	M	H

H-High; M-Medium; L-Low

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ALLIED II

AUCSA2 - STATISTICAL METHODS

Hours : 5 **Credits : 5**
Semester : II

Preamble

This course facilitates the students to impart knowledge on various statistical methods like central tendency, dispersion, correlation and regression, probability and sampling theory.

Course Outcomes

On successful completion of the course, the students will be able to

CO	Description of COs	Blooms' Taxonomy Level
CO1	Revise the formula of different Means, Median, Mode, Deviations, Correlation, Regression, Probability, Chi square test, Degree of Freedom, etc.	Knowledge (Level K1)
CO2	Describe the formula of different Means, Median, Mode, Deviations, Correlation, Regression, Probability, Chi square test, Degree of Freedom, etc.	Comprehension (Level K2)
CO3	Understand the concepts Central tendency, Dispersion, Correlation and regression, Probability and Sampling theory.	Comprehension (Level K2)
CO4	Solve the problems by using formulas	Comprehension(Level K2) Application(Level K3)
CO5	Apply the suitable techniques of statistics to solve real time problems.	Application(Level K3)

(80% Problems & 20% Theory)

COURSE CONTENT

UNIT - I:

Measures of central tendency: Mean: Arithmetic Mean, Weighted Arithmetic Mean, Combined Arithmetic Mean, Geometric Mean, Harmonic Mean, Median and mode – Relation between mean, median and mode.

UNIT - II:

Dispersion: Range - Mean deviation - Standard deviation - Coefficient of Variation – Quartile Deviation.

UNIT - III:

Correlation: Karl Pearson`s Coefficient of Correlation – Rank correlation**. Regression:** Regression Equations - Difference between correlation & Regression.

UNIT - IV:

Probability: Permutation and Combination- Important terms in probability- Measurement of Probability: Classical Approach- Relative Frequency theory of probability – Personalistic view of probability – Axiomatic Approach of probability. Theorems of probability: Addition – Multiplication – Odds.

UNIT - V:

Sampling Theory and Test of Significance: Introduction – Estimation theory – Testing of hypothesis – Testing if significance for large samples and small samples. Chi Square Test: Introduction – x2 test, Degrees of freedom, Test of goodness of fit, Test of Independence.

TEXT BOOK

- Pillai R. S. N. Bagavathi V, *Statistical Methods*, Sultan Chand and Sons & Company Ltd. New Delhi(2005).

REFERENCE BOOK

- S.P.Gupta S.Chand & sons "*Statistical Methods"*.

WEBLIOGRAPHY

- https://onlinecourses.nptel.ac.in/noc22_ma29/preview
- https://onlinecourses.nptel.ac.in/noc22_ma29/preview
- http://www.statisticshowto.com
- http://www.cuemath.com
- http://www.embibe.com
- http://www.statisticssolutions.com
- http://www.statisticsbyjim.com

Mapping					
	PO1	**PO2**	**PO3**	**PO4**	**PO5**
CO1	H	M	H	H	M
CO2	M	H	H	M	H
CO3	H	H	H	H	H
CO4	H	M	L	H	M
CO5	M	H	H	M	H

H-High; M-Medium; L-Low

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SKILL BASED COURSE – II

AUCSWT2 - WEB TECHNOLOGY LAB

Hours : 2 **Credits : 2**
Semester : II

Preamble

This course helps the students to learn HTML, Photoshop and Macromedia Flash .It provide the knowledge and skills for creating websites.

Course Outcomes

On successful completion of the course, the students will be able to

CO	Description of COs	Blooms' Taxonomy Level
CO1	Classify various HTML tags.	Comprehension (Level K2)
CO2	Apply various HTML tags.	Applications(Level K3)
CO3	Illustrate HTML tags in simple programs.	Applications(Level K3)
CO4	Describe HTML tags in simple programs.	Analysis(Level K4)
CO5	Design websites using HTML tag.	Synthesis(Level K5)

PROGRAM LIST

Web Designing

- Design a webpage using basic HTML tags.
- Create a webpage using formatting tags.
- Develop a webpage using list tags.
- Create a webpage using physical and logical tags.
- Prepare class timetable using table tags.
- Link the web pages internally and externally using anchor tag.
- Split the web page using frame tag.

- Design a web page by applying various attributes of form tag.
- Create a website for your college.
- Design a web page for your Department.

WEBLIOGRAPHY

- https://www.edx.org/professional-certificate/harvardx-computer-science-for-web-programming
- https://www.w3schools.com
- https://www.php.net.in
- http://html.net
- http://www.programmersneed.com e-resources
- https://epgp.inflibnet.ac.in T. Y

Mapping					
	PO1	**PO2**	**PO3**	**PO4**	**PO5**
CO1	H	H	L	H	H
CO2	M	H	M	H	H
CO3	H	M	L	H	M
CO4	M	H	M	H	H
CO5	H	M	H	L	H

H-High; M-Medium; L-Low

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CORE V

AUCSC3 - JAVA PROGRAMMING

Hours : 5 **Credits : 4**
Semester : III

Preamble

This course helps the students to inculcate knowledge on Concepts of Java Programming and to create wide range of Applications and Applets using Java.

Course Outcomes

On successful completion of the course, the students will be able to

CO	Description of COs	Blooms' Taxonomy Level
CO1	Recollect the OOPs concepts such as Class, Inheritance, Encapsulation and Polymorphism	Knowledge (Level K1) Comprehension (Level K2)
CO2	Understand fundamentals of object-oriented programming in Java, including defining classes, invoking methods, using class libraries, etc.	Knowledge (Level K1) Comprehension (Level K2)
CO3	Implement programs using more advanced futures such as Interface, Packages and Multithreading.	Application (Level K3)
CO4	Analyze differences between application program and applets, applet lifecycle and graphics programming.	Analysis(Level K4)
CO5	Validate Java Programs using Stream Classes and files.	Synthesis(Level K5)

COURSE CONTENT

UNIT - I:

Fundamentals of Object Oriented Programming: Introduction – Object Oriented Paradigm – Basic concepts of OOP – Benefits of OOP – Applications of OOP - Java Evolution.

Over View of Java Language: Introduction-Simple Java Program – Java Program Structure - Java Tokens - Java Statements - Implementing a Java Program - Java Virtual Machine - Command Line Arguments - Constants, Variables and Data Types.

UNIT - II:

Classes, Objects and Methods: Introduction-Defining a Class- Static Members-Overriding Methods-Final Variables and Methods-Final Classes- Finalizer Methods-Abstract Methods and Classes –Visibility Control.

Interfaces: Introduction-Defining Interfaces-Extending Interfaces - Implementing Interfaces-Accessing Interface Variables.

UNIT - III:

Packages: Java API Packages-Using System Packages-Creating Packages-Accessing a Package-Using a Package-Adding a Class to Package-Hiding Classes.

Multithreading Programming: Creating Threads - Extending the Thread Class-Stopping and Blocking a Thread - Life Cycle of a Thread-Thread Exceptions-Thread Priority-Synchronization-Implementing the 'Runnable' Interface - Managing Error and Exceptions.

UNIT - IV:

Applet Programming: Introduction-Preparing to Write Applets-Applet Life Cycle-Designing web page-Passing Parameters to Applets Event Handling.

Graphics Programming: The Graphics Class-Lines and Rectangles-Circle and Ellipses-Drawing Arcs-Drawing Polygons-Line Graphs-Using Control Loops in Applets.

UNIT - V:

Managing Input/Output Files in Java: Introduction - Concept of Streams - Stream Classes - Byte Stream Classes - Character Stream Classes - Input/Output Exceptions - Creation of Files - Reading/Writing Characters - Reading/Writing Bytes - Random Access Files.

Java Database Connectivity: Introduction – JDBC architecture –Discussion with example-Overview of JDBC components.

TEXT BOOK

- E.Balagurusamy, *Programming with JAVA, Sixth Edition*. Tata McGraw – Hill, New Delhi 2010.

REFERENCE BOOK

- Herbert Schildt *, "Java 2: The Complete Reference"*, Fifth Edition, Tata McGraw – Hill 2002.

WEBLIOGRAPHY

- https://onlinecourses.nptel.ac.in/noc22_cs47/preview
- https://onlinecourses.nptel.ac.in/noc21_cs03/preview
- http://www.javatpoint.com
- https://www.tutorialspoint.com
- https://www.geeksforgeeks.com e-resources
- https://epathshala.nic.in/

Mapping					
	PO1	**PO2**	**PO3**	**PO4**	**PO5**
CO1	H	H	L	H	M
CO2	H	H	H	M	H
CO3	H	H	L	H	M
CO4	H	H	M	H	H
CO5	H	M	H	H	H

H-High; M-Medium; L-Low

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CORE VI

AUCSC4 - COMPUTER ORGANIZATION

Hours : 6 **Credits : 4**
Semester : III

Preamble

This course concerns about basic structure of hardware and software, and helps to know input output organization and memory subsystem.

Course Outcomes

On successful completion of the course, the students will be able to

CO	Description of COs	Blooms' Taxonomy Level
CO1	Recollect the basic structure of Computer and get the idea about instructions, input-output organization, Memory system, Processing and Pipelining.	Knowledge (Level K1)
CO2	Understand the basic structure of Computer and get the idea about instructions, input-output organization, Memory system, Processing and Pipelining.	Comprehension (Level K2)
CO3	Classify various digital components.	Comprehension (Level K2)
CO4	Describe arithmetic and logic operations of processing unit.	Comprehension (Level K2) Application (Level K3)
CO5	Analyze various types of computers, instructions, memory system and working principles of pipelining.	Application (Level K3) Analysis (Level K4)

COURSE CONTENT

UNIT – I:

Basic Structure of Computers: Computer Types **-** Functional Units - Basic Operational Concepts - Bus Structures – Software – Performance – Processor Clock – Basic Performance Equation.

Memory Location and Address: Byte Addressability – Big Endian and Little Endian Assignments – Word Alignment.

UNIT - II:

Instructions and Instruction Sequencing: Assembly Language Notation – Basic Instructions Type – Addressing Modes.

Input-Output Organization: Accessing I/O devices - Interrupts – Interrupts Hardware - Enabling and Disabling Interrupts - Handling Multiple Devices – Exceptions - Direct Memory Access.

UNIT - III:

Memory System: Basic Concepts – Semi Conductor RAM Memories **-** Static Memories- Asynchronous DRAMs – Read - Only Memories. **Cache Memories**: Introduction - Mapping Functions- Replacement Algorithm. **Virtual Memories:** Address Translation.

UNIT - IV:

The Processing Unit: Fundamentals Concepts: Register Transfers – Performing. Arithmetic or Logic Operations - Fetching a word from Memory-Storing a word into the Memory.

UNIT - V:

Pipelining: Basic Concepts - Role of Cache Memories – Pipeline Performance – Data Hazards – Operand Forwarding - Instruction Hazards.

TEXT BOOK

- V.Carl Hamacher, Zvonko G. Vranesic,Safwat G. Zaky, *Computer Organization 5th Edition*, McGraw Hill Publication, 2002.

REFERENCE BOOK

- Morris Mano *Computer System Architecture*, Prentice Hall of India, 2001.

WEBLIOGRAPHY

- https://onlinecourses.nptel.ac.in/noc22_cs88/preview
- https://www.edx.org/course/computer-system-design-advanced-concepts-of-modern
- http://educatech.in
- http://learncomputerscienceonline.com
- http://www.studytonight.com
- http://binaryterms.com
- http://www.geeksforgeeks.org

Mapping					
	PO1	**PO2**	**PO3**	**PO4**	**PO5**
CO1	M	H	M	H	H
CO2	M	H	M	H	H
CO3	H	H	H	H	L
CO4	M	H	M	H	H
CO5	H	H	H	M	H

H-High; M-Medium; L-Low

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CORE VII

AUCSC5 - FUNDAMENTALS OF DIGITAL PRINCIPLES

Hours : 5 **Credits : 4**
Semester : III

Preamble

This course facilitates the students to acquire knowledge on Digital Computers and also it enables the students to understand the working principles of computer.

Course Outcomes

On successful completion of the course, the students will be able to

CO	Description of COs	Blooms' Taxonomy Level
CO1	Gain knowledge of input and output devices, Number systems, simplification techniques, combinational and sequential circuits.	Knowledge (Level K1) Comprehension (Level K2)
CO2	Understand the fundamental concepts and techniques used in digital electronics.	Knowledge (Level K1) Comprehension (Level K2)
CO3	Apply the concepts of Boolean Algebra, Logic gates, Logic variables and Truth tables to simplify equations.	Application (Level K3)
CO4	Analyze combinational logic in terms of Adder, Subtractor and Multiplexer circuits	Comprehend (Level K3) Analysis (Level K4)
CO5	Comprehend the combinational logic in terms of Adder, Subtractor and Multiplexer circuits.	Comprehend (Level K3)

COURSE CONTENT

UNIT - I:

Number Systems: Introduction – conversion – Floating point representation of Numbers – Binary Arithmetic Operations - 1's & 2's Complement – 9's &10's complement – Binary Coded Decimal.

Codes: Weighted Binary Codes – Non-weighted Codes – Error detecting codes – Error Correcting codes – Alpha numeric codes.

UNIT - II:

Boolean algebra and Minimization Techniques: Introduction – Boolean Logic Operations – Basic Laws of Boolean Algebra – Demorgan's Theorems– Sum of Products and Product of Sums – Karnaugh Map.

UNIT - III:

Logic Gates: Introduction – Positive and Negative Logic Designation – Logic Gates.

Arithmetic: Half Adder – Full Adder –Half Subtractor- Full Subtractor.

UNIT - IV:

Combinational Circuits: **Multiplexer**: Basic Four – Input Multiplexer – 8 to 1 Multiplexer – 16 to 1 Multiplexer.

De-Multiplexer: 1 to 4 De-Multiplexer – 1 to 8 De-Multiplexer – 1 to 16 De- Multiplexer.

UNIT - V:

Decoders: Basic binary decoder- 3-to-8 decoder – 4-to-16 decoder. **Encoders:** Octal to binary encoder – decimal to BCD encoder. **Flip – Flops**: Introduction - S-R Flip-Flops - D Flip- Flops - J-K Flip-Flops - T Flip- Flops.

TEXT BOOK

- S.Salivahanan and S.Arivazhagan , *Digital Circuits and Design*, Third Edition, Vikas Publishing House Pvt. Ltd. New Delhi, 2007

REFERENCE BOOK

- Anil K.Maini,, *Digital Electronics Principles, Devices, Applications* Wiley Publications, 2007.

WEBLIOGRAPHY

- https://www.edx.org/course/circuits-and-electronics-3-applications-2
- http://www.researchgate.net//publication/305991188_digital_electronics_basic _principles and _design
- http://www.agner.org/digital/digital-electronics-agner-fog
- http://www.en.m.wikipedia.org/wiki/digital-electonics
- http://www.all about circuits.com/textbook/digital/

Mapping					
	PO1	**PO2**	**PO3**	**PO4**	**PO5**
CO1	H	H	L	H	H
CO2	H	H	M	H	H
CO3	H	H	L	H	M
CO4	H	H	M	H	H
CO5	H	H	H	H	H

H-High; M-Medium; L-Low

****

CORE VIII PRACTICAL - III

AUCSL3 - JAVA PROGRAMMING

Hours : 5 **Credits : 3**
Semester : III

Preamble

This course helps the students to inculcate knowledge on Concepts of Java Programming and to create wide range of Applications and Applets using Java.

Course Outcomes

On successful completion of the course, the student will be able to

CO	Description of COs	Blooms' Taxonomy Level
CO1	Sketch the Oops concepts and gain the knowledge of Java and Applet.	Application (Level K3)
CO2	Write Java application programs using proper program structure.	Application (Level K3)
CO3	Describe the core java concepts.	Analysis (Level K4)
CO4	Understand about Applets.	Analysis (Level K4)
CO5	Create simple stand alone application using Core Java and remote applications using Applet	Synthesis(Level K5)

PROGRAM LIST

- To perform addition of complex numbers using class and objects.
- To perform multiplication of matrices using class and objects.
- To perform volume calculation using method overloading.
- Using command line arguments, test if the given string is palindrome or not.
- Using multilevel inheritance process student marks.
- Implement multiple inheritance for payroll processing.

- Package illustration.
- To illustrate built-in exceptions (any four).
- To create multiple threads
  - Using Thread class
  - Using Runnable interface
- String manipulation using string methods.
- Applet – Graphical methods.

WEBLIOGRAPHY

- https://onlinecourses.nptel.ac.in/noc22_cs47/preview
- https://onlinecourses.nptel.ac.in/noc21_cs03/preview
- http://www.javatpoint.com
- https://www.tutorialspoint.com
- https://www.geeksforgeeks.com
- https://epathshala.nic.in/

Mapping					
	PO1	**PO2**	**PO3**	**PO4**	**PO5**
CO1	H	H	H	H	M
CO2	H	H	H	M	H
CO3	H	M	H	L	H
CO4	M	H	M	H	H
CO5	H	H	H	M	H

H-High; M-Medium; L-Low

****

ALLIED III

AUCSAL4 - R PROGRAMMING LAB

Hours : 5 **Credits : 5**
Semester : III

Preamble

This course facilitates the students to acquire knowledge on basic concepts of R – Programming to create wide range of applications.

Course Outcome

On successful completion of the course, the students will be able to

CO	Description of COs	Blooms' Taxonomy Level
CO1	Import and summarize data-sets in R	Knowledge (Level K1)
CO2	Review and manipulate and summarize data-sets in R	Comprehension (Level K2)
CO3	Identify online resources for R and import new function packages into the R workspace.	Comprehension(Level K2)
CO4	Demonstrate use of basic functions.	Application (Level K3)
CO5	Create and edit visualizations with R	Analysis (Level K4) Synthesis(Level K5)

PROGRAM LIST

- To create a list containing Strings, numbers, vectors and a logical values
- To add 10 to each elements of the first vector in a given list
- To merge given two list into one list
- To convert a given list into vector
- To convert a given data frame to a list by rows
- To count number of objects in a given list
- To assign NULL to a given list elements

- To convert given matrix to a list
- To find all the elements in the given list that are not in the another list
- To create a list named S containing sequence of 15 Capital letters starting form 'E'

WEBLIOGRAPHY

- https://www.edx.org/course/r-programming-fundamentals
- http://www.r-project.org/about.html
- http://www.rstudio.com/
- http://www.tutorialspoint.com/r/index.htm
- https://www.coursera.org/learn/r-programming
- https://www.w3schools.com/r/default.asp

Mapping					
	PO1	**PO2**	**PO3**	**PO4**	**PO5**
CO1	H	H	H	H	M
CO2	H	H	H	M	H
CO3	H	M	H	H	H
CO4	M	H	H	H	M
CO5	H	M	H	H	L

H-High; M-Medium; L-Low

****

SKILL BASED COURSE - III

AUCSID3 - IMAGE DESIGNING LAB

Hours : 2 **Credits : 2**
Semester : III

Preamble

This course imparts practical knowledge on various editing techniques in Photoshop.

Course Outcomes

On successful completion of the course, the students will be able to

CO	Description of COs	Blooms' Taxonomy Level
CO1	Design real world applications using Photoshop.	Application (Level K3)
CO2	Analyze new features in Photoshop.	Analysis (Level K4)
CO3	Develop new drawings using Photoshop.	Comprehension (Level K2)
CO4	Expertise to work with Photoshop.	Knowledge (Level K1)
CO5	Design skills pertaining to publication & web design.	Application (Level K3) Synthesis(Level K5)

PROGRAMMING LIST

1. Album Preparation
2. Invitation Preparation
3. Wall Papers
4. Visiting Card
5. Background Changing and Removing
6. Birthday Card
7. Friendship Card

8. Wedding Invitation Card
9. Cloning an Image
10. Flex Designing
11. Photo Editing
12. Book Cover
13. Web site Background designing
14. Image Compression

WEBLIOGRAPHY

- http://www.edx.org
- http://digital-photography-school.com
- http://www.photoshopessentials.com
- http://www.picturecorrect.com
- http://enviragallery.com
- http://photoshop.fandom.com

Mapping					
	PO1	**PO2**	**PO3**	**PO4**	**PO5**
CO1	H	H	M	H	M
CO2	H	M	H	H	H
CO3	H	H	M	H	M
CO4	H	L	H	H	M
CO5	M	H	H	H	L

H-High; M-Medium; L-Low

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NON MAJOR ELECTIVE - I

AUCSN1 - BASICS OF COMPUTERS

Hours : 2 **Credits : 2**
Semester : III

Preamble

This course helps the students to learn about basic level appreciation programme, Generation of Computers, Transmission Technology and Communication Systems.

Course Outcomes

On successful completion of the course, the students will be able to

CO	Description of COs	Blooms' Taxonomy Level
CO1	Recognize the different types of Computer.	Application (Level K3)
CO2	Identify the components of a computer system.	Application (Level K3)
CO3	Acquire knowledge on Communication System and Elements of Computers.	Comprehension (Level K2)
CO4	Understand the purpose and elements of information systems and Web browsers.	Comprehension(Level K2)
CO5	Inculcate knowledge on Internet, Intranet and E-mail.	Application (Level K3)

COURSE CONTENT

UNIT-I:

EVOLUTION: Introduction to Computer –Computer Generations – Classifications of Computers – Silicon Chips – Binary Number System.

UNIT-II:

PARTS OF A COMPUTER SYSTEM: Input Devices – Output Devices – Storage Devices – Processors and Programs – Memory of Computer – Operating Systems – Types of Operating Systems Programs.

UNIT-III:

INFORMATION TRANSMISSION TECHNOLOGY: Digital Communication – Optical Fibre Revolution- Network –Internet –Domain Name System – Intranet- Intranet Services.

UNIT-IV:

COMMUNICATION SYSTEMS: E-mail –FAX –Voice Mail – How to use the Internet – Modem Installation – Network Configuring.

UNIT-V:

WEB BROWSERS AND SEARCH ENGINES: Web Browsers-Searching the Web –Internet Security –Profile Assistant –Content Advisor –Hacking.

TEXT BOOK

- Editors Mary Joseph, G.S.Surabhi*, Easy Computer***,** 3rd Edition**,** SISO Publications,2000.

REFERENCE BOOKS

- Pradeep K.Sinha and Priti Sinha, *Computer Fundamentals*, Sixth Edition, BPB Publications, 2017.
- Poonam Yadav and Praveen Kumar, *Computer Fundamentals,* Vayu Education, 2013.

WEBLIOGRAPHY

- http://www.edx.org
- https://edu.gcfglobal.org/en/subjects/office
- https://www.tutorialspoint.com
- https://office.live.com
- http://www.techdifferences.com

Mapping					
	PO1	**PO2**	**PO3**	**PO4**	**PO5**
CO1	H	H	L	H	H
CO2	H	H	M	H	H
CO3	H	H	L	H	M
CO4	H	H	M	H	H
CO5	H	H	H	H	H

H-High; M-Medium; L-Low

****

CORE IX

AUCSC6 - PYTHON PROGRAMMING

Hours : 6 **Credits : 5**
Semester : IV

Preamble

This course helps the students to understand the core concepts of programming in Python such as strings, operators, conditional statements, loops, functions and regular expressions.

Course Outcomes

On successful completion of the course, the students will be able to

CO	Description of COs	Blooms' Taxonomy Level
CO1	Get the basic knowledge about Python Programming.	Comprehension (Level K2)
CO2	Apply essential programming concepts like strings, operators, conditional statements, functions, files and exception handling of Python in simple programs.	Application(Level K3)
CO3	Analyze various concepts of Python.	Analysis (Level K4)
CO4	Acquire the knowledge of problem solving and programming capability in Python.	Synthesis (Level K5)
CO5	Evaluate applications using core concepts of Python.	Evaluation (Level K6)

COURSE OUTCOMES

UNIT-I:

Introduction to Python: Introduction-Python Overview-Getting started with python-Comments-Python identifiers -Reserved Keywords-Variables-Standard data types-Operators-Statements and Expressions-String operations-Boolean expressions.

Classes and Objects: Overview of OOP-Class definition-Creating objects-Objects as Arguments-Objects as return value-Build in class attributes-Inheritance-Method overriding-Data encapsulation-Data hiding.

UNIT-II:

Control statements: The for loop - While Statement - if -if else statement-Input from keyboard

Functions: Introduction-Built –in functions-Type conversion-Type coercion-Date and time-dir() function-help() function-user defined functions-Parameters & arguments-Function calls-The return statement-Python recursive function-The anonymous functions-writing python scripts.

UNIT-III:

Strings: Strings Compound data type - len function-String slices- Strings are Immutable – String traversal – Escape characters –String formatting operator – String formatting functions.

Lists: Values and accessing elements – Lists are Mutable – Traversing a list –Deleting elements from list – Build –in list operators-Built – in list methods.

UNIT-IV:

Tuples: Creating tuples – Accessing values in tuples –Tuple assignment – Tuples as return values –Basic tuple operations –Built – in list methods.

Dictionaries: Creating Dictionary-Accessing values in Dictionary-Updating Dictionary-Deleting Elements from Dictionary-Operations in dictionary Built in dictionary methods.

UNIT-V:

Files and Exceptions: Text files-Opening a file-Opening file-Closing a File-File object attributes-Reading from a file-Writing to a file-Renaming a file-Deleting a file-File related methods-Directories-Exceptions-Build-in-Exceptions-Handling Exceptions-Exception with arguments-User defined Exception.

TEXT BOOK

- E.Balagurusamy, "*Introduction to Computing and Problem Solving Python"*,4th Edition, McGraw Hill publications, 2018.

REFERENCE BOOKS

- Mark Lutz, *Programming Python*, 4/e, O'Reilly Media, 2010.
- Mark Summerfield, *Programming in Python 3*, 2nd Edition, Addison Wesley, 2010.

WEBLIOGRAPHY

- https://onlinecourses.nptel.ac.in/noc22_cs31/preview
- https://onlinecourses.nptel.ac.in/noc21_cs32/preview
- www.tutorialspoint.com
- http://en.wikibooks.org/wiki/A Beginners Python Tutorial.
- www.geeksforgeeks.com
- http://www.python.org./
- http://programmimg historian.org./en/lessons/working-with-web-pages

Mapping					
	PO1	**PO2**	**PO3**	**PO4**	**PO5**
CO1	H	M	H	H	H
CO2	H	H	M	H	H
CO3	H	H	M	H	M
CO4	H	M	H	H	L
CO5	H	L	M	L	H

H-High; M-Medium; L-Low

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CORE X

AUCSC7 - OPERATING SYSTEM

Hours : 5 **Credits : 5**
Semester : IV

Preamble

This course teaches the Fundamental Aspect of Operating System and gives sufficient knowledge on various system Resources.

Course Outcomes

On successful completion of the course, the students will be able to

CO	Description of COs	Blooms' Taxonomy Level
CO1	Recollect the concept of fundamental aspect of operating system	Knowledge (Level K1)
CO2	Describe the concept of fundamental aspect of operating system	Knowledge (Level K1)
CO3	Understand the concept of scheduling algorithms, Deadlock, process management and memory management	Knowledge (Level K1) Comprehension (Level K2)
CO4	Sketch the Threats , Memory management and production policies	Application (Level K3)
CO5	Acquire the knowledge about file management	Analysis(Level K4)

COURSE CONTENT

UNIT - I:

Introduction: What is an Operating System – Mainframe Systems – Distributed Systems **Processes:** Process Concept – Process Scheduling – Interprocess Communication.

UNIT - II:

Threads: Overview – Multithreading Models. **CPU Scheduling:** Basic Concepts – Scheduling Criteria – Scheduling Algorithms.

UNIT - III:

Process Synchronization: Background – The Critical Section Problem – Synchronization Hardware – Semaphores.

Deadlock: System Model – Deadlock Characterization – Methods For Handling Deadlocks – Deadlock Prevention – Deadlock avoidance – Deadlock detection – Recovery from deadlock.

UNIT - IV:

Memory Management: Swapping – Contiguous Memory allocation – Paging – Segmentation – Segmentation with Paging – Virtual Memory: Demand Paging.

UNIT - V:

Security: User Authentication – Cryptography

File System Interface: File Concept – File Access Methods – Directory Structure.

TEXT BOOK

- Silberschatz, Galvin, Gagne, *Operating Systems Concepts*, Sixth Edition, John Wiley & Sons, Inc., 2003.

REFERENCE BOOK

- Milan Milenkovic , *Operating Systems (Concepts and Design),* Second Edition, Tata McGraw – Hill, 2001.

WEBLIOGRAPHY

- https://www.edx.org/course/computer-hardware-and-operating-systems
- https://edu.gcfglobal.org/en/computerbasics/understanding-operating-systems/1/
- https://whatis.techtarget.com/definition/operating-system-OS
- https://www.computerhope.com/jargon/o/os.htm
- https://www.geeksforgeeks.org/introduction-of-operating-system-set-1/

Mapping					
	PO1	**PO2**	**PO3**	**PO4**	**PO5**
CO1	H	H	H	M	H
CO2	H	H	H	L	H
CO3	H	M	H	M	H
CO4	H	H	H	M	H
CO5	H	H	M	H	L

H-High; M-Medium; L-Low

****

CORE XI PRACTICAL - IV

AUCSL5 - PYTHON PROGRAMMING

Hours : 6 **Credits : 3**
Semester : IV

Preamble

This course helps the students to produce well designed programs using advanced concepts of python like regular expressions, exception handling, multithreading, web programming and database programming.

Course Outcomes

On successful completion of the course, the students will be able to

CO	Description of COs	Blooms' Taxonomy Level
CO1	Implement various operators of Python.	Application(Level K3)
CO2	Develop basic Python programs with I/O.	Application(Level K3)
CO3	Apply string and lists in Python.	Analysis(Level K4)
CO4	Analyze the Python programs with variables, loop, functions and operators.	Analysis(Level K4)
CO5	Develop Python programs with files.	Synthesis(Level K5)

PROGRAM LIST

1. Exercises to implement File handling concept.
2. Exercises to implement list.
3. Exercises using Dictionary.
4. Exercises to perform set operations.
5. Exercises using object oriented concepts.
6. Exercises to perform operations using Regular expression.
7. Exercises using exceptional handling technique.

8. Exercises using multithreading.
9. Exercises to perform operations on Byte objects.
10. Create an application using python with database connectivity.

WEBLIOGRAPHY

- https://onlinecourses.nptel.ac.in/noc22_cs26/preview
- https://onlinecourses.nptel.ac.in/noc21_cs21/preview
- http://www.ibiblio.org/g2swap/byteofpython/read/
- http://docs.python.org/3/tutorial/index.html
- http://interactivepython.org/courselib/static/pythonds.
- http://en.wikibooks.org/wiki/A Beginners Python Tutorial.
- http://www.python.org./

Mapping					
	PO1	**PO2**	**PO3**	**PO4**	**PO5**
CO1	H	H	M	H	M
CO2	H	H	M	H	M
CO3	H	H	M	H	M
CO4	H	L	M	M	H
CO5	H	M	H	M	H

H-High; M-Medium; L-Low

****

CORE XII PRACTICAL - V

AUCSL6 - MATLAB

Hours : 6 **Credits : 3**
Semester : IV

Preamble

This course provides the practical solution for mathematical problems and do image enhancement process.

Course Outcomes

On successful completion of the course, the students will be able to

CO	Description of COs	Blooms' Taxonomy Level
CO1	Illustrate simple mathematical functions/equations in MATLAB	Application (Level K3)
CO2	Interpret simple mathematical functions and operations theorem using plots or display.	Application (Level K3)
CO3	Test the overall structure of MATLAB program to display required output.	Analysis (Level K4)
CO4	Implement core MATLAB concepts.	Analysis (Level K4)
CO5	Create simple stand alone application using MATLAB	Synthesis(Level K5)

PROGRAM LIST

1. Basic operations
2. Adding Two Images
3. Crop Image
4. Comparison of Two Values
5. Gray Scale to Binary Image
6. Flipping An Image

7. Image Complement
8. Adding and Reducing Noise in an Image
9. Color Space Conversion
10. Image Reduction
11. Multiply and Divide an Image
12. Image Transformation by DCT
13. Image Compression
14. Image Segmentation
15. Edge Detection

WEBLIOGRAPHY

- https://www.edx.org/course/matlab-essentials
- http://www.mathworks.com/help/rptgen/ug/create-links.html
- http://www.mathworks.com/help/rptgen/ug/mlreportgen.dom.pageref-class.html
- http://www.mathworks.com-help/slrequirements/ref/slreq.find.html
- http://www.mathworks.in /help/matlab/getting-started-with-matlab.html

Mapping					
	PO1	**PO2**	**PO3**	**PO4**	**PO5**
CO1	H	M	H	L	M
CO2	H	H	M	H	M
CO3	M	H	H	L	H
CO4	M	H	M	H	H
CO5	H	H	H	M	H

H-High; M-Medium; L-Low

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ALLIED IV

AUCSA4 - OPERATION RESEARCH

Hours : 5 **Credits : 5**
Semester : IV

Preamble

This course gives basic ideas about Operation Research and solves the LPPs using various methods of operation Research.

Course Outcomes

On successful completion of the course, the students will be able to

CO	Description of COs	Blooms' Taxonomy Level
CO1	Understand the mathematical formulation of L.P.P	Comprehension (Level K2)
CO2	Describe the concept of Operation Research.	Comprehension (Level K2)
CO3	Apply transportation and assignment problem to allocate resources.	Application (Level K3)
CO4	Acquire the knowledge about networks and graph.	Analysis (Level K4)
CO5	Validate network scheduling by PERT and CPM.	Synthesis (Level K5)

(80% Problems & 20% Theory)

COURSE CONTENT

UNIT - I:

Operation Research: Introduction – Origin and development of O.R - Nature and Features of O.R - Modelling in Operation Research - General Solution Methods For O.R Models - Scientific Methods in O.R – Methodology of O.R – Applications of Operation Research.

UNIT - II:

Linear Programming Problem: Introduction- Mathematical Formulation of the Problem - Graphical Solution Method - Some Exceptional Cases – General Linear Programming Problem- Canonical and Standard forms of LPP - The Simplex methods.

UNIT - III:

Transportation Problem: Introduction – General Transportation Problem - The Transportation Table-Duality in Transportation Problem - Loops in Transportation Problems - Formulation of the Transportation Problem - Solution of a TP – Finding an I.B.F.S – Test for Optimality- Degeneracy in TP- MODI Method – Some Exceptional Cases.

UNIT - IV:

Assignment Problems: Introduction - Definition of the Transportation Model- Mathematical Formulation of the Problem - The Assignment Methods – Unbalanced Assignment Models - Maximization case in AP - Travelling Salesman Problem.

UNIT - V:

Network Scheduling by PERT / CPM : Introduction – Network and Basic Components – Logical Sequencing – Rules of Network Construction – Critical Path Analysis – Probability considerations in PERT – Distinction between PERT and CPM.

TEXT BOOK

- Kanti swarup P.K Gupta, *"Operations Research",* 14th Edition, Manmohan Sultan Chand & Sons, 2000.

REFERENCE BOOKS

- P.K. Gupta & D.S. Hira, *operations research*, 7th Edition, S.Chand Publisher, 2015.
- Ganapathy, *Resource management techniques,* 2019 Edition, ARS Publications, 2019.

WEBLIOGRAPHY

- https://onlinecourses.nptel.ac.in/noc22_mg30/preview
- https://onlinecourses.nptel.ac.in/noc21_mg43/preview
- http://www.researchgate.net/publications/30640113_computer_based_optimaization_techniques
- http://ieeexplore.ieee.org/document/1127005
- http://www.optimizely.com/optimization-glossary/search/engine-optimization
- http://en.m.wikipedia.org/wiki/search_engine_optimization

Mapping					
	PO1	**PO2**	**PO3**	**PO4**	**PO5**
CO1	H	H	L	H	H
CO2	H	H	M	H	H
CO3	H	H	L	H	M
CO4	H	H	M	H	H
CO5	H	H	H	H	H

H-High; M-Medium; L-Low

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SKILL BASED COURSE - IV

AUCSIT4 - INTERNET OF THINGS

Hours : 2 **Credits : 2**
Semester : IV

Preamble

This course helps the students to know Internet of Things such as Sensors, inter-networking and cyber space.

Course Outcome

On successful completion of the course, the students will be able to

CO	Description of COs	Blooms' Taxonomy Level
CO1	Interpret different design challenges faced in IoT.	Comprehension (Level K2)
CO2	Explain the components of IoT.	Knowledge (Level K1)
CO3	Make use of IoT Circuits to obtain solutions.	Application (Level K3)
CO4	Analyze basic protocols in wireless sensor network.	Analysis (Level K4)
CO5	Gain and understand the concepts of Internet of Things.	Synthesis (Level K5)

COURSE CONTENT

UNIT - I:

Introduction To IoT: Defining IoT, Characteristics of IoT, Physical design of IoT, Logical design of IoT, Functional blocks of IoT, Communication models & APIs.

UNIT - II:

IoT & M2M: Machine to Machine, Difference between IoT and M2M, Software define Network.

UNIT - III:

Network & Communication Aspects: Wireless medium access issues, MAC protocol survey, Survey routing protocols, Sensor deployment & Node discovery, Data aggregation & dissemination.

UNIT - IV:

Challenges In IoT: Design challenges, Development challenges, Security challenges, Other challenges.

UNIT - V:

Domain Specific Applications Of IoT: Home automation, Industry applications, Surveillance applications, Other IoT applications.

TEXT BOOK

- Vijay Madisetti, Arshdeep Bahga - *Internet of Things: A Hands-On Approach,* Orient Blackswan Private Limited - New Delhi, 2014.

REFERENCE BOOK

- Waltenegus Dargie and Christian Pollabauer, *"Fundamentals of Wireless Sensor Networks: Theory and Practices",* John Wiley & Sons Publications, 2010.

WEBLIOGRAPHY

- https://onlinecourses.nptel.ac.in/noc22_cs53/preview
- https://onlinecourses.nptel.ac.in/noc21_cs17/preview
- https://www.tutorialspoint.com/internet_of_things/index.htm
- https://www.javatpoint.com/iot-internet-of-things
- https://www.guru99.com/iot-tutorial.html

Mapping					
	PO1	**PO2**	**PO3**	**PO4**	**PO5**
CO1	H	H	M	H	H
CO2	H	H	H	H	H
CO3	H	M	H	H	L
CO4	M	H	H	L	H
CO5	H	H	M	H	M

H-High; M-Medium; L-Low

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CORE XIII

AUCSC8 - RELATIONAL DATABASE MANAGEMENT SYSTEM

Hours : 6 **Credits : 5**
Semester : V

Preamble

This course facilitates the students to know the Core concepts of RDBMS and helps the students to create and connect the multiple tables and to have knowledge on Normalization Techniques.

Course Outcomes

On successful completion of the course, the students will be able to

CO	Description of COs	Blooms' Taxonomy Level
CO1	Remember the basic concepts and applications of database system	Knowledge(Level K1)
CO2	Understand the basic concepts and applications of database system	Knowledge(Level K1) Comprehension (Level K2)
CO3	Get the idea about various data models which describes the structure of database	Comprehension (Level K2)
CO4	Design principles using ER models and Normalization approach	Comprehension (Level K2) Applications(Level K3)
CO5	Interpret SQL interface of a RDBMS package to create, secure, maintain and query a database and PL/SQL programming using Triggers and Cursors	Comprehension (Level K2) Analysis(Level K4)

COURSE CONTENT

UNIT - I:

Introduction: Database System Applications – Purpose of Database Systems – View of Data – Database Languages – Transaction Management – Database users and Administrators – Overall System Structure.

UNIT - II:

Relational Model: Entity – Relationship Model: Basic Concepts – Design Issues – Mapping cardinalities – Keys – E – R Diagrams – Weak entity sets – Extended E – R feature.

UNIT - III:

Data Normalization: Pitfalls in Relational Database Design- Entity – Decomposition – Functional Dependencies – Normalization – First Normal Form – Second Normal Form – Third Normal Form – Boyce – Codd Normal Form – Fourth Normal Form – Fifth Normal Form – Denormalization.

UNIT - IV:

PL/SQL: A Programming Language: History – Fundamentals – Block Structure – Comments – Data Types – Other Data Types – Declaration – Assignment operation – Bind variables – Substitution Variables – Printing – Arithmetic Operators.

Control Structures and Embedded SQL: Control Structures – Nested Blocks – SQL in PL/SQL – Data Manipulation – Transaction Control statements.

UNIT - V:

PL/SQL Cursors and Exceptions: Cursors – Implicit & Explicit Cursors and Attributes – Cursor FOR loops – SELECT…FOR UPDATE – WHERE CURRENT OF clause – Cursor with Parameters – Cursor Variables – Exceptions – Types of Exceptions (Predefined Oracle Server Exceptions, User Defined Exceptions).

PL/SQL Composite Data Types: Records – Tables – Varrays. **Named Blocks:** Triggers.

TEXT BOOKS

- Abraham Silberschatz, Henry F.Korth, S.Sudarshan *Database System Concepts*, TMH 5th Edition *(UNIT s – I, II,III- Chapter – 7(7.1,7.2,7.3),* 2002.
- Alexis Leon, Mathews Leon , *Database Management Systems (UNIT – III – Chapter -11),* Vikas Publications, 2002.
- Nilesh Shah, *Database Systems Using Oracle*, 2nd edition, PHI, 2015.
  (UNIT – IV: Chapter10 &11 UNIT – V Chapter 12,13&14)

REFERENCE BOOK

- Gerald V. Post, *Database Management Systems*, 3rd Edition, TMH, 2008.

WEBLIOGRAPHY

- https://onlinecourses.nptel.ac.in/noc22_cs51/preview
- https://onlinecourses.nptel.ac.in/noc21_cs04/preview
- http://www.javapoint.com/dbms-tutorialIntroductionToDataStructure
- http://www.tutorialspoint.com/dbms/index.htm
- http://www.geeksforgeeks.org/introduction-of-dbms-database-management-system-set-1
- http://searchsqlserver.techtarget.com/definition/database-management-system

Mapping					
	PO1	**PO2**	**PO3**	**PO4**	**PO5**
CO1	M	H	H	H	L
CO2	H	M	H	H	M
CO3	H	H	M	H	M
CO4	H	M	H	H	H
CO5	L	H	H	M	H

H-High; M-Medium; L-Low

****

CORE XIV PRACTICAL - VI

AUCSL7 - DOT NET PROGRAMMING

Hours : 5 **Credits : 4**
Semester : V

Preamble

This course helps the students to acquire the knowledge on .NET framework and to develop web based and application based software.

Course Outcomes

On successful completion of the course, the students will be able to

CO	Description of COs	Blooms' Taxonomy Level
CO1	Demonstrate the database connectivity with application programming.	Knowledge(Level K1)
CO2	Design and execute different kinds of tasks in real time application.	Comprehension (Level K2)
CO3	Analyze the Dot Net programs with variables, loop, functions and operators	Analysis(Level K4)
CO4	Develop basic Dot Net programs with Database connectivity	Comprehension (Level K2) Applications(Level K3)
CO5	Validate the results for the given input data.	Applications(Level K3)

PROGRAM LIST

- Write a program to find a grade of students.
- Write a program to find factorial of given number using functions.
- Write a program to arrange names in alphabetical order.

- Write a program to display the user information.(personal details)
- Calculator.
- Notepad
- Employee Details.
- Hospital Management system.
- Sales Transaction System.
- News Paper Vendor Details

WEBLIOGRAPHY

- https://www.edx.org
- http://www.javapoint.com/vb-net
- http://www.tutorialspoint.com/v.net/index.htm
- http://www.vbtutor.net/index.php
- http://www.guru99.com/vb-net-tutorial.html

Mapping					
	PO1	**PO2**	**PO3**	**PO4**	**PO5**
CO1	M	H	L	H	M
CO2	H	H	M	H	H
CO3	H	H	M	H	M
CO4	H	M	M	H	H
CO5	H	H	H	M	H

H-High; M-Medium; L-Low

****

CORE XV PRACTICAL - VII

AUCSL8 - RELATIONAL DATABASE MANAGEMENT SYSTEM

Hours : 5 **Credits : 3**
Semester : V

Preamble

This course facilitates the students to know the Core concepts of RDBMS and helps the students to create and connect the multiple tables and to have knowledge on Normalization Techniques.

Course Outcomes

On successful completion of the course, the students will be able to

CO	Description of COs	Blooms' Taxonomy Level
CO1	Explain various SQL Commands	Comprehension (Level K2) Applications(Level K3)
CO2	Write SQL queries to user specification	Comprehension (Level K2) Applications(Level K3)
CO3	Design database schema considering normalization and relationships within database	Comprehension (Level K2) Applications(Level K3)
CO4	Develop PL/SQL Programs	Comprehension (Level K2) Applications(Level K3)
CO5	Develop triggers, procedures and Cursors	Applications(Level K3) Analysis(Level K4)

PROGRAM LIST

- DDL, DML, DCL Commands.
- Logical, Comparison, Conjunctive & Arithmetic Operators.
- **Retrieving rows with Characters functions:**

- CONCAT (Concatenation)
- REPLACE
- SUBSTR (Substring)
- LENGTH

- **Retrieving rows with Aggregate functions:**
  - GROUP BY
  - HAVING
- **Retrieving rows with date functions & number function:**
  - SYSDATE
  - ABS, FLOOR, CEIL, ROUND, POWER
- **JOINS:**
  - Union, Intersection & Union all
  - Simple Join
  - Self-Join
  - Outer Join
- **CONSTRAINTS:**
  - Domain Integrity (Not Null, Check)
  - Entity Integrity (Unique & Primary Key)
  - Referential Integrity (Foreign Key)
- VIEW: **PL/SQL**
- PL/SQL Programs with Control Structures
- PL/SQL Programs with Exception Handling
- PL/SQL Programs with Cursors
- Creating & Calling Procedures

WEBLIOGRAPHY

- https://onlinecourses.nptel.ac.in/noc22_cs51/preview
- https://onlinecourses.nptel.ac.in/noc21_cs04/preview
- http://www.javapoint.com/dbms-tutorialIntroductionToDataStructure
- http://www.tutorialspoint.com/dbms/index.htm
- http://www.geeksforgeeks.org/introduction-of-dbms-database-management-system-set-1
- http://searchsqlserver.techtarget.com/definition/database-management-system

Mapping					
	PO1	**PO2**	**PO3**	**PO4**	**PO5**
CO1	M	H	H	H	H
CO2	H	M	H	H	M
CO3	H	H	M	H	H
CO4	H	M	H	H	H
CO5	L	H	H	M	H

H-High; M-Medium; L-Low

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ELECTIVE 1.1

AUCSE1 - COMPUTER GRAPHICS

Hours : 6 **Credits : 5**
Semester : V

Preamble

This course offers Concepts on basic Graphical Techniques and learns 2D and 3D Transformations.

Course Outcomes

On successful completion of the course, the student will be able to

CO	Description of COs	Blooms' Taxonomy Level
CO1	List the display devices and recognize the Viewing and clipping algorithms.	Knowledge(Level K1)
CO2	Have a broad knowledge about the overview of Graphics System.	Comprehend(Level K2)
CO3	Describe the attributes of output primitives and geometric Transformation.	Comprehend(Level K2)
CO4	Demonstrate the algorithms for drawing lines & circle.	Applications(Level K3) Synthesis (Level K5)
CO5	Analyze the 2D and 3D viewing and clipping algorithms.	Analysis(Level K4)

COURSE CONTENT

UNIT - I:

Video Display Devices: Refresh Cathode Ray tubes – Raster Scan Displays – Random Scan displays – Color CRT Monitors – Raster Scan System – Random Scan System.

UNIT - II:

Output Primitives: Points and Lines – Line –Drawing Algorithms – Loading frame Buffer – Line function – Circle – Generating Algorithms.

UNIT - III:

Attributes of Output Primitives: Line Attributes – Curve Attributes – Color and Grayscale Levels – Area – Fill Attributes – Character Attributes.

UNIT - IV:

Geometric Transformations: Basic Transformations – Matrix Representations – Composite Transformations – Other Transformations.

UNIT - V:

Viewing: The Viewing Pipeline – Viewing Co – ordinate Reference Frame – Window – to – Viewport Co – ordinate Transformation – 2D Viewing Functions – **Clipping Operations :**Point Clipping – Line Clipping : Cohen – Sutherland Line Clipping ,Liang – Barsky Line Clipping – Curve Clipping – Text Clipping.

TEXT BOOK

- Donald Hearn, M.Pauline Baker , *Computer Graphics* - 2nd Edition, Pearson Education,2007.

REFERENCE BOOK

- Foley, VanDam, Feiner, and hughes , *Computer graphics: principles and practice,* 3rd edition, Pearson Education, 2013.

WEBLIOGRAPHY

- https://www.edx.org/course/computer-graphics-2
- http://www.tutorialandexample.com
- http://webeduclick.com/display-devices/
- http://slideshare.net
- http://www.brainkart.com
- http://cgwithsuman.blogspot.com

Mapping					
	PO1	**PO2**	**PO3**	**PO4**	**PO5**
CO1	H	H	H	L	M
CO2	H	L	H	M	H
CO3	H	H	H	H	M
CO4	M	H	H	M	H
CO5	H	H	M	H	L

H-High; M-Medium; L-Low

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ELECTIVE 1.2

AUCSE1 - FUNDAMENTALS OF DIGITAL IMAGE PROCESSING

Hours : 6 **Credits : 5**
Semester : V

Preamble

This course helps the students to understand the fundamentals steps in Digital Image Processing and to inculcate knowledge on image compression and image segmentation.

Course Outcomes

On successful completion of the course, the student will be able to

CO	Description of COs	Blooms' Taxonomy Level
CO1	Recollect the various types of data in Multimedia.	Knowledge (Level K1)
CO2	Understand the fundamental elements of DIP and representation of an image in multi-dimensional aspects	Knowledge (Level K1) Comprehension (Level K2)
CO3	Apply arithmetic and logical operations for image enhancement process	Application (Level K3)
CO4	Interpret the knowledge on compression techniques for security of an image.	Analysis (Level K4)
CO5	Verify various deduction mechanisms in image segmentation.	Synthesis(Level K5)

COURSE CONTENT

UNIT - I:

Digital Image Processing: Definition – The Origin of Digital Image Processing – Elements of digital image processing – Steps involved in DIP – Fundamental Steps in DIP – Structure of the Human

Eye – Brightness Adaptation and Discrimination – Image Acquisition using a single sensor – Image Acquisition using sensor arrays.

UNIT - II:

Basic concepts in image sampling and Quantization – Representing Digital Images – Spatial and Gray level resolution – Zooming and shrinking digital images – Neighbors of a pixel – Adjacency, Connectivity – Regions and Boundaries – Distance Measures, Image Operations on a pixel basis.

UNIT - III:

Image Enhancement in Spatial Domain – Gray level transformation – Image Negatives – Log Transformations – Enhancements using arithmetic/logical operations – Image Subtraction – Image Averaging.

UNIT - IV:

Image Compression: Coding Redundancy – Inter pixel redundancy – Psycho visual redundancy – Image compression models – The source encoder and decoder – The channel Encoder and Decoder.

UNIT - V:

Image Segmentation: Detection of discontinuous – Point detection – Line Detection – Edge Detection – Representation of Images: Chain Codes – Polygonal approximation – Signatures – Boundary segments – Skeletons.

TEXT BOOK

- Rafael C. Gonzalez & Richard. E. Woods Addison , *Digital Image Processing* – Wesley publishing Company Inc.(Third Indian Reprint, 2000).

REFERENCE BOOKS

- Anil K.Jain, *"Fundamentals Digital Image Processing"*, PHI, 1989.
- B.Chandra and D.Dutta Majundar*,"Digital Image Processing and Analysis",* 2nd Edition, Prentice Hall of India private Ltd., New Delhi, 2011.

WEBLIOGRAPHY

- https://onlinecourses.nptel.ac.in/noc22_ee116/preview
- https://www.edx.org
- http://mygreatlearning.com
- http://www.simplilearn.com
- http://www.sciencedirect.com
- http://www.techtarget.com
- https://towardsdatascience.com

Mapping					
	PO1	**PO2**	**PO3**	**PO4**	**PO5**
CO1	H	H	H	M	M
CO2	H	L	H	H	L
CO3	H	H	H	H	M
CO4	H	H	M	H	H
CO5	H	M	H	H	M

H-High; M-Medium; L-Low

****

ELECTIVE 2.1

AUCSE2 - DATA MINING TECHNIQUES

Hours : 6 **Credits : 5**
Semester : V

Preamble

This course provides the fundamentals of data warehousing, Data mining Concepts and Data Mining Techniques.

Course Outcomes

On successful completion of the course the students will be able to

CO	Description of COs	Blooms' Taxonomy Level
CO1	Understand the basic Concepts of data mining and data warehousing	Comprehension (Level K2)
CO2	Analyze various data mining techniques like classifications, clustering, association rule mining, prediction and related algorithm	Analysis(Level K4)
CO3	Choose appropriate data mining techniques to carry out simple data mining tasks	Application(Level K3) Analysis(Level K4)
CO4	Develop data mining algorithms to store heterogeneous data	Synthesis(Level K5)
CO5	Evaluate various data mining concepts and techniques.	Synthesis(Level K5)

COURSE CONTENT

UNIT - I:

Data Warehousing: Introduction – Definition – Multidimensional Data Model - OLAP Operations – Warehouse Schema – Data warehousing Architecture – Metadata – OLAP Engine - Data Warehouse Backend Process.

UNIT - II:

Data Mining: Definition – Comparison with other fields – DM Techniques – Issues Application Areas.

UNIT - III:

Association Rules: Methods – A Priori algorithm – Partition Algorithm – Pincer-Search Algorithm – Border Algorithm – Generalized Association Rules with Item constraints.

UNIT - IV:

Clustering Techniques: Clustering Paradigms – Partitioning Algorithms – CLARA – CLARANS- Hierarchical Clustering – DBSCAN – Categorical Clustering Algorithms – STIRR. **Decision Trees**: Tree Construction Principle – Best Split – Splitting Indices – Splitting Criteria CART – ID3.

UNIT - V:

Web Mining: Introduction – Web Content Mining – Web Structure Mining – Web Usage Mining – Text Mining – Hierarchy of Categories – Text Clustering.

TEXT BOOK:

- Arun K. Pujari , *Data Mining Techniques,* Universities Press, 2001.

REFERENCE BOOKS:

- Jewie Han, Michelins Kamber, *Data Mining :Concepts and Techniques,* 3rd Edition, 2011.
- Pang-Ning Tan, Michael Steinbach, Vipin Kumar, *Introduction to Data Mining,* Pearson Education, 2007.

WEBLIOGRAPHY

- https://onlinecourses.nptel.ac.in/noc22_cs11/preview
- https://onlinecourses.nptel.ac.in/noc21_cs06/preview
- http://thesai.org/downloads/data_mining_web_data_mining_techniques
- http://en.m.wikipedia.org/wiki/datamining
- http://www.analyticsvidhya.com/introduction_to_clustering_and_different_methods_of_clustering
- http://www.datanovia.com
- http://arxiv.org/avs/1801.10123

Mapping					
	PO1	**PO2**	**PO3**	**PO4**	**PO5**
CO1	H	M	M	H	H
CO2	H	H	M	M	H
CO3	H	H	H	M	H
CO4	H	M	H	H	H
CO5	H	H	H	H	L

H-High; M-Medium; L-Low

****

ELECTIVE 2.2

AUCSE2 - INFORMATION SECURITY

Hours : 6 **Credits : 5**
Semester : V

Preamble

This Course enables the student to understand various methodologies available for securing information and to learn about various Security Models.

Course Outcomes

On successful completion of the course, the student will be able to

CO	Description of COs	Blooms' Taxonomy Level
CO1	Get an idea about Information Security Basis, Security Investigation, Security Analysis, Security Models and Security Physical Design	Knowledge(Level K1)
CO2	Understand Security Investigation and Security Analysis	Comprehension (Level K2) Applications(Level K3)
CO3	Analyze Security Models	Analysis(Level K4)
CO4	Figure out the physical design of the security.	Analysis(Level K4)
CO5	Understand the security threads and attacks	Synthesis(Level K5)

COURSE CONTENT

UNIT - I:

Information Security Basics: Introduction -History, What is Information Security?, Critical Characteristics of Information, NSTISSC Security Model, Components of an Information System, Securing the Components, Balancing Security and Access, The SDLC, The Security SDLC

UNIT - II:

Security Investigation: Security Investigation - Need for Security, Business Needs, Threats, Attacks, Legal, Ethical and Professional Issues.

UNIT - III:

Security Analysis: Security Analysis-Risk Management: Identifying and Assessing Risk, Assessing and Controlling Risk.

UNIT - IV:

Security Models: Logical Design-Blueprint for Security, Information Security Policy, Standards and Practices, ISO 17799/BS 7799, NIST Models, VISA International Security Model, Design of Security Architecture, Planning for Continuity.

UNIT - V:

Security Physical Design: Physical Design-Security Technology, IDS, Scanning and Analysis Tools, Cryptography, Access Control Devices, Physical Security, Security and Personnel.

TEXT BOOK

- Michael E Whitman and Herbert J Mattord, *"Principles of Information Security",* 4th Edition, Vikas Publishing House, New Delhi, 2003.

REFERENCE BOOK

- William Stallings, *Cryptography and Network Security Principles and Practices*, 4th Edition, Pearson Prentice Hall, 2006.

WEBILIOGRAPHY

- https://onlinecourses.nptel.ac.in/noc22_cs23/preview
- https://onlinecourses.nptel.ac.in/noc21_cs30/preview
- http://securityscorecard.com/blog/stop-10-information-security-websites-to-follow
- http://www.catonetworks.com/blog/stop-15network security-websites/
- http://developers.google.com/search/docs/advanced/security/https
- http://www.nativeintelligence.com/resources/cyber-security-links/

Mapping					
	PO1	**PO2**	**PO3**	**PO4**	**PO5**
CO1	H	H	H	H	H
CO2	H	H	M	H	L
CO3	H	M	M	H	H
CO4	M	H	H	L	M
CO5	H	H	H	H	H

H-High; M-Medium; L-Low

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SKILL BASED COURSE – V

AUCSNA5 - NUMERICAL APTITUDE

Hours : 2 **Credits : 2**
Semester : V

Preamble

This course helps the students to improve their employability skills.

Course Outcomes

On successful completion of the course, the students will be able to

CO	Description of COs	Blooms' Taxonomy Level
CO1	Recollect and describe the basic concepts of logical reasoning	Knowledge (Level K1) Comprehension (Level K2)
CO2	Discuss problem solving and reasoning ability.	Comprehension (Level K2)
CO3	Demonstrate various principles involved in solving mathematical problems and thereby reducing the time taken for performing job functions.	Application(Level K3)
CO4	Apply various principles involved in solving mathematical problems and thereby reducing the time taken for performing job functions.	Application(Level K3)
CO5	Critically evaluate various real life situations by resorting to analysis of key issues and factors.	Analysis (Level K4)

COURSE CONTENT

UNIT - I:

Operations on Numbers - H.C.F & L.C.M of Numbers (Solved Examples).

UNIT - II:

Problems on Numbers - Problems on Ages - Problems on Trains (Solved Examples).

UNIT - III:

Percentage – Profit & Loss – Ratio & Proposition (Solved Examples).

UNIT - IV:

Time & Work –Time & Distance (Solved Examples).

UNIT - V:

Simple Interest-Compound Interest-Permutations & Combinations (Solved Examples).

TEXT BOOK

- R.S.Aggarwal , *Quantitative Aptitude for Competitive Examination,* Revised Edition, S.Chand, 2017.

REFERENCE BOOK

- KJS Khurana, Rajeev Markanday, *"Numerical Ability"*, 2nd Edition, S.Chand,2020.

WEBLIOGRAPHY

- https://www.edx.org
- http://practiceaptitudetests.com
- http://aptitude-test.com
- http://www.investopedia.com
- http://www.cuemath.com
- http://www.mathsisfun.com
- http://www.math-only-math.com

Mapping					
	PO1	**PO2**	**PO3**	**PO4**	**PO5**
CO1	H	H	M	H	M
CO2	H	M	H	H	H
CO3	H	H	L	H	H
CO4	H	H	M	L	H
CO5	H	M	H	H	L

H-High; M-Medium; L-Low

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CORE XVI

AUCSC9 - COMPUTER NETWORKS

Hours : 6 **Credits : 4**
Semester : VI

Preamble

This Course imparts knowledge on network concepts like layers wireless concepts, transmission and security .It give knowledge on networking technologies like broadband and Bluetooth.

Course Outcomes

On successful completion of the course, the student will be able to

CO	Description of COs	Blooms' Taxonomy Level
CO1	Recall the networking concepts, Transmission media and OSI layers of Network	Knowledge (Level K1) Comprehension (Level K2)
CO2	Compare OSI & TCP/IP models	Knowledge (Level K1) Comprehension (Level K2)
CO3	Deploy the elementary Data link protocols	Application (Level K3)
CO4	Interpret various Routing algorithms	Application (Level K3) Analysis (Level K4)
CO5	Review transport service and Transmission control protocol like DNS, E-mail.	Synthesis(Level K5)

COURSE CONTENT

UNIT - I:

Introduction: Uses of Computer Networks – Network Hardware: LAN- MAN – WAN- Wireless Networks –Network Software – Reference Models: OSI – TCP/IP- Comparison of OSI and TCP/IP.

UNIT - II:

Physical Layer: Guided Transmission Media: Magnetic Media – Twisted Pair – Coaxial Cable – Fiber Optics – Wireless Transmission: Electromagnetic Spectrum – Radio Transmission – Microwave – Infrared and Millimeter – Light wave Transmission – Telephone Network: Structure of the Telephone System - Switching - Communication Satellites.

UNIT - III:

Data Link Layer: Services Provided to the Network Layer- Framing- Error Control – Flow Control- Error Detection and Correction - Elementary Data Link Protocols: An Unrestricted Simplex Protocol- A Simplex Stop-and-Wait Protocol- A Simplex Protocol for a Noisy Channel- Sliding Window Protocols: A One-Bit Sliding Window Protocol- A Protocol Using Go Back N- A Protocol Using Selective Repeat.

UNIT - IV:

Network Layer: Network Layer Design Issues- Routing Algorithms: The Optimality Principle- Shortest Path Routing- Flooding- Distance Vector Routing- Link State Routing- Hierarchical Routing- Routing for mobile Hosts - Broadcast Routing- Multicast Routing.

UNIT - V:

Transport Layer: The Transport Service: Services Provided to the Upper Layers-Transport Service Primitives- Elements of Transport Protocols: Addressing- Connection Establishment- Connection Release- Flow Control and Buffering -Multiplexing. **Application Layer:** Electronic Mail: Architecture and Services.

Cyber Security: Introduction Cyber Crime – Malware and its types- Kinds of Cyber Crime.

TEXT BOOK

- Andrew S.Tanenbawm, *Computer Network*, 5th Edition, PHI,1996.
- Dr. Jeetendra Pande, "*Introduction to Cyber Security*", Uttarakhand Open University, 2017.

REFERENCE BOOK

- BehrouzA.Forouzan, *Data Communications and Networking*, 4th Edition, TMH, 2006.

WEBLIOGRAPHY

- https://onlinecourses.nptel.ac.in/noc22_cs19/preview
- https://onlinecourses.nptel.ac.in/noc21_cs18/preview
- https://www.edx.org/microbachelors/nyux-cybersecurity-fundamentals
- https://www.javatpoint.com/types-of-computer-network
- https://www.geeksforgeeks.org/basics-computer-networking/
- https://www.tutorialspoint.com/computer_fundamentals/computer_networking.htm
- https://www.guru99.com/types-of-computer-network.html

Mapping					
	PO1	**PO2**	**PO3**	**PO4**	**PO5**
CO1	H	H	M	H	H
CO2	H	M	H	M	H
CO3	H	H	M	M	H
CO4	H	H	M	M	H
CO5	H	H	M	H	L

H-High; M-Medium; L-Low

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CORE XVII

AUCSC10 - SOFTWARE ENGINEERING

Hours : 5 **Credits : 4**
Semester : VI

Preamble

These courses facilitate the students to know the concept of computer based system and products and to present the role of software, system analysis, design concepts, testing methods and strategies.

Course Outcome

On successful completion of the course, the student will be able to

CO	Description of COs	Blooms' Taxonomy Level
CO1	Recollect the basic terminologies and requirement for software development.	Knowledge (Level K1)
CO2	Comprehend the core concepts of life cycle models.	Knowledge (Level K1) Comprehension (Level K2)
CO3	Figure out the Data flow Diagram.	Application(Level K3)
CO4	Apply the cost & size estimation Techniques and maintenance cost.	Comprehension (Level K2) Analysis (Level K4)
CO5	Evaluate the software through various testing methods.	Synthesis (Level K5)

COURSE CONTENT

UNIT-I: Introduction: Introduction to Software engineering some definitions – some size factors – quality to productivity factors – managerial Issue. Planning a software project: defining the problems developing a solution strategy – planning on organization structure – other planning activities.

UNIT-II: Cost estimation Software cost estimation: Software cost factors – Software cost estimation techniques – staffing – level estimation – estimative software maintenance costs.

UNIT-III: Requirements Software requirements, definition: the software requirements specifications – formal specification techniques – language and processors for requirements specification.

UNIT-IV: Design Software Design: fundamentals Descartes concepts – Modules and Modularizing criteria -Design techniques – detailed design considerations – real time and distributed system design – test plan – mile – stones walk through and inspection – design guide line.

UNIT-V: Verification and validation Verification and validation techniques: Quality Assurance – static analysis – symbolic execution – unit testing and debugging system - testing formal verification. Software maintenance: enhancing maintainability during developments managerial aspects of software maintenance – configuration management – sources code metrics – other maintenance tools and techniques.

TEXT BOOK:

- Richard E. Fairley, *Software Engineering Concepts*, McGraw Hill Pvt Ltd, 2001.

REFERENCE BOOKS:

- Roger S, Pressman - *Software Engineering, A Practitioner's Approach*,. 2014.
- Pankaj Jalote, *An Integrated Approach to Software Engineering* - Narosa, 3rd Edition, 2005

WEBLIOGRAPHY

- https://onlinecourses.nptel.ac.in/noc22_cs39/preview
- https://onlinecourses.nptel.ac.in/noc22_cs106/preview
- https://www.edx.org/course/software-development-fundamentals
- http://www.edx.org
- http://www.geektonight.com
- http://ecomputernotes.com
- http://www.techtarget.com
- http://slideshare.net

Mapping					
	PO1	**PO2**	**PO3**	**PO4**	**PO5**
CO1	H	H	H	M	H
CO2	H	H	H	M	H
CO3	H	H	H	H	H
CO4	H	H	M	M	H
CO5	H	H	H	M	H

H-High; M-Medium; L-Low

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CORE XVIII

AUCSPR - PROJECT WORK

Hours : 7 **Credits : 5**
Semester : VI

Preamble

This course motivate the Students to work in emerging/latest technologies, help the students to develop ability, to apply theoretical and practical tools/techniques to solve real life problems related to industry, academic institutions and research laboratories.

Course Outcomes

On successful completion of the course, the student will be able to

CO	Description of COs	Blooms' Taxonomy Level
CO1	Understand the problem.	Comprehension (Level K2)
CO2	Implement & execute the real time application.	Application(Level K3)
CO3	Apply& execute the real time application.	Application(Level K3)
CO4	Analyze various testing methods.	Analysis (Level K4)
CO5	Verify the expected results in real time applications.	Synthesis (Level K5)

COURSE CONTENT

The project is of 7 hours/week for one (Semester VI) semester duration and a student is expected to do planning, analyzing, designing, coding, and implementing the project. The initiation of project should be with the project proposal. The synopsis approval will be given by the project guides.

The project proposal should include the following:

- ***Title***
- ***Objectives***

- ***Details of modules and process logic***
- ***Limitations of the project***
- ***Tools/Platforms, Languages to be used***
- ***Sample Coding and Screenshots***
- ***Conclusion***

For the project work, the guide (internal) evaluates the work for 40 marks based on the performance of the candidates during the development of the project and the external examiner will evaluate the project work for 60 marks.

The Project work should be either an individual one or group of not more than two members.

WEBLIOGRAPHY

- https://www.edx.org/learn/project-based-learning
- http://en.m.wikipedis.org/wiki/visual_basic_.net
- http://stackoverflow.com/questions/436605/vb-net-how-to-reference-vv-net-module
- http://www.codeproject.com/articles/14003/building-websites-with-vb-net
- http://code .visual studio.com/docs
- http://docs.microsoft.com/en-us-visual studio/ide/solutions-and-projects-in-visual-studio

Mapping					
	PO1	**PO2**	**PO3**	**PO4**	**PO5**
CO1	M	H	H	H	H
CO2	H	H	H	H	H
CO3	H	H	H	H	M
CO4	H	H	M	H	M
CO5	H	M	H	L	H

H-High; M-Medium; L-Low

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ELECTIVE 3.1

AUCSE3 - BIG DATA ANALYTICS

Hours : 6 **Credits : 5**
Semester : VI

Preamble

This course offers knowledge about concepts and challenge of big data. It also the helps students to acquire knowledge about Hadoop, MapReduce, Pig and Hive technology.

Course Outcomes

On successful completion of the course, the students will be able to

CO	Description of COs	Blooms' Taxonomy Level
CO1	Recall and Understand the concept of Big data techniques, environment, framework and Hadoop ecosystem	Knowledge(Level K1)
CO2	Apply Statistical data analysis and tools to manage and analyze the big data	Comprehension (Level K2) Applications(Level K3)
CO3	Analyze Hadoop components and their uses for big data processing	Analysis(Level K4)
CO4	Examine the impact of big data for business decisions and strategy	Analysis(Level K4)
CO5	Manage large-scale analytics tools to solve some open big data problems	Synthesis(Level K5)

COURSE CONTENT

UNIT-I:

OVERVIEW OF BIG DATA: Defining Big Data-Big Data Types –Big Data Types-Analytics-Industry-Examples of Big Data-Big Data and Data Risk-Big Data Technologies-Benefits of Big Data.

UNIT-II:

BASICS OF HADOOP: Big Data Hadoop-Hadoop Architecture-Main Components of Hadoop Framework-Analysing Big Data with Hadoop-Benefits of Distributed Applications-Hadoop Distributed File system-Advantages of Hadoop-Ten Big Hadoop Platforms.

UNIT-III:

NoSQL DATABASES: NoSQL Data Management-Typesw of NoSQL Databases-Query Model for Big Data-Benefits of NoSQL-MongoDB-Advantages of MongoDB over RDBMS-Replication in MongoDB.

UNIT-IV:

MapReduce: Introduction to MapReduce-Working of MapReduce-Map Operations-MapReduce User Interfaces.

UNIT-V:

HBase, CASSANDRA and JAQL: Introduction to HBase-Row-Oriented and column-Oriented Data Stores-HDFS Vs HBase-HBase Architecture-HBase Data Model-Introduction to Cassandra-Features of Cassandra.Introduction to JAQL-JSON-Components of JAQL

TEXT BOOKS

- Michael Berthold, David J. Hand, *Intelligent Data Analysis*, Springer. (2007)
  (For Unit I to III)
- Tom White, *Hadoop:The Definitive Guide,* Third Edition, O'reilly Media (For Unit IV to V), 2012.

REFERENCE BOOKS

- Anand Rajaraman and Jeffrey David Ullman, *Mining of Massive Datasets*, 2nd Edition, Cambridge University Press, 2012.
- Viktor Mayer, Schonberger, Kenneth Cukier, *Big Data : A Revolution That Will Transform How We Live, Work and Think*, 2nd Edition, Houghton Mifflin Harcourt publishing company, 2013.

WEBLIOGRAPHY

- https://www.edx.org/micromasters/adelaidex-big-data
- http://www.buisnessprocessincubator.com/content/top-10-websites-for-big-data-analytics
- http://www.sciencedirect.com//topics/computer-science/big-data-analytics
- http://en.m.wikipedia.org/wiki/Big_data
- http://journalofbigdata.springeropen.com/
- http://link.springer.com/chapter/10.1007/978-3-319-65151-4-23

Mapping					
	PO1	**PO2**	**PO3**	**PO4**	**PO5**
CO1	H	H	M	M	H
CO2	M	H	M	M	M
CO3	H	M	H	H	M
CO4	M	H	H	M	M
CO5	H	H	H	H	M

H-High; M-Medium; L-Low

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ELECTIVE 3.2

AUCSE3 - CLOUD COMPUTING

Hours : 6 **Credits : 5**
Semester : VI

Preamble

This course enables the students to learn and understand the fundamental concepts of Cloud and its services, and helps the students to understand the service oriented architecture in cloud database.

Course Outcomes

On successful completion of the course, the student will be able to

CO	Description of COs	Blooms' Taxonomy Level
CO1	Define cloud computing and get the idea about cloud architecture.	Knowledge (Level K1) Comprehension (Level K2)
CO2	Understand and use the web services available in Cloud Computing.	Comprehension (Level K2)
CO3	Interpret Cloud Services, security, and architecture.	Synthesis (Level K5)
CO4	Know the available web services in cloud computing.	Analysis (Level K4)
CO5	Get an idea of security threats in cloud.	Application(Level K3)

COURSE CONTENT

UNIT - I:

Introduction – Definition of Cloud – Cloud types – Characteristics of Cloud – Cloud standards – Measuring cloud's value – Early adopters and new applications - Laws of cloudonomics – Cloud obstacles – Cloud adoption – Cloud computing costs – Service level agreements – Licensing model -

Cloud architecture: Cloud computing stack – Composability – Infrastructure – Platforms – Virtual appliances – Communication protocol – Applications – Connecting to cloud.

UNIT - II:

Cloud Services: IaaS – PaaS – SaaS – IdaaS – CaaS - Abstraction and Virtualization: Virtualization technologies – Load balancing – Hypervisors – Machine imaging – Porting applications – Capacity planning: Baseline and Metrics – Measurements – System metrics – Load testing – Resource ceilings – Servers and Instance types – Network Capacity – Scaling.

UNIT - III:

Exploring Platform as a Service (PaaS): Service model – Development – Sites and tools – Application features - Exploring Cloud Infrastructures: Administrating the clouds – Management responsibilities – Life cycle management - Cloud management products – Cloud management standards – Cloud Security: Securing the Cloud – Securing the Data – Establishing identity and presence.

UNIT - IV:

Service oriented architecture – Introduction – SOA communications – Managing and Monitoring SOA – Relating SOA and Cloud - Applications to the cloud: Functionality mapping – Applications attributes – Cloud service attributes – System abstraction – Cloud bursting – Applications and Cloud APIs – Cloud Storage: Measuring digital universe – Provisioning cloud storage – Cloud backup solutions – Cloud storage interoperability.

UNIT - V:

Exploring cloud mail service – Syndicate services – Instant messaging – Collaboration technologies using social networking – Audio and Video streaming – VoIP applications – Mobile market – Smart phones with the cloud - Mobile Web service: Service types – Service discovery – SMS – Protocols – Synchronization.

TEXT BOOK

- Barrie Sosinsky, *Cloud Computing Bible*, Wiley Publications, 1st Edition, 2011 (Unit I to V).

REFERENCE BOOKS

- Rountree, Castrillo, *The Basics of Cloud Computing - Understanding the Fundamentals of Cloud Computing in Theory and Practice,* First Edition, Syngress Publication, 2013.
- Michael Miller, *Cloud Computing: Web-Based Applications That Change the Way You Work and Collaborate Online,* Que Publishing, 2008.
- Srinivasan. S, *Cloud Computing Basics,* Springer, 2013.

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- https://onlinecourses.nptel.ac.in/noc21_cs14/preview
- http://www.infoworld.com
- http://www.leadingedgetech.co.uk
- http://www.researchgate.net
- http://www.cloudsigma.com
- https://learn.g2.com

Mapping					
	PO1	**PO2**	**PO3**	**PO4**	**PO5**
CO1	H	H	M	M	H
CO2	H	M	H	M	H
CO3	H	H	M	M	H
CO4	H	H	M	H	H
CO5	H	H	H	H	M

H-High; M-Medium; L-Low

****

ELECTIVE 3.3

AUCSE3 - MOOC ONLINE COURSE

Hours : 6 **Credits : 5**
Semester : VI

Preamble

This course motivate the students to learn online courses.

Course Outcome

At the end of the course ,the students will able to gain the knowledge in the specific area and get a online certificate.

CO	Description of COs	Blooms' Taxonomy Level
CO1	Understand and use the web services available in Internet	Knowledge (Level K1) Comprehension (Level K2)
CO2	Know the web resources in Internet.	Analysis (Level K4)
CO3	Interpret usage of Online courses.	Synthesis (Level K5)
CO4	Know the available course content of the new technologies.	Analysis (Level K4)
CO5	Get an idea of New technologies.	Application(Level K3)

WEBLIOGRAPHY

- https://onlinecourses.nptel.ac.in
- https://www.edx.org
- www.swayam.gov.in
- www.mooc.in

Mapping					
	PO1	**PO2**	**PO3**	**PO4**	**PO5**
CO1	H	H	M	M	H
CO2	H	H	H	M	M
CO3	H	H	M	M	H
CO4	H	H	M	H	H
CO5	H	L	H	H	M

H-High; M-Medium; L-Low

****

SKILL BASED COURSE - VI

AUCSTI6 - TRENDS IN INFORMATION TECHNOLOGY

Hours : 2 **Credits : 2**
Semester : VI

Preamble

This course offers the students to develop the changes in Information Technology, Applications and system around us.

Course outcomes

On successful completion of the course the students will be able to

CO	Description of COs	Blooms' Taxonomy Level
CO1	Acquire knowledge on Information Security and Multimedia.	Knowledge (Level K1)
CO2	Understand the concept of Telecommunications.	Comprehension (Level K2)
CO3	Develop Scripts for Information Technology applications.	Application (Level K3)
CO4	Analyze the computing requirements for the appropriate solutions.	Analysis (Level K4)
CO5	Evaluate multimedia based applications.	Synthesis(Level K5)

COURSE CONTENT

UNIT - I:

GENERAL SOFTWARE FEATURES AND TRENDS: Introduction – Ease of use – Graphical user Interface – More Features – Requirements of more Powerful Hardware – multi-Platform Capability –Network Capabilities –Compatibility with other Software – Object Linking and Embedding – Group work Capabilities – Mail Enabling – Web Enabling.

UNIT - II:

INTRODUCTION TO WEB DESIGNING: Style sheet - Style sheet basic - Add style to document - Creating Style sheet rules - Style sheet properties - Font - Text - List - Color and background color - Box - Display properties.

UNIT - III:

INTRODUCTION TO MOBILE COMPUTING ARCHITECTURE: History of computers-History of Internet-Internet the Ubiquitous Network - Architecture for Mobile computing - Three-tier Architecture - Design considerations for mobile computing.

UNIT - IV:

INTRODUTION TO GRID COMPUTING: Introduction - Parallel and Distributed Computing - Cluster computing Grid computing - Review of web services – OGSA.

UNIT - V:

E-WASTE MANAGEMENT: Global context in e- waste - E-waste pollutants - E waste hazardous properties - Effects of pollutant (E- waste) on human health and surrounding environment - domestic e-waste disposal - Basic principles of E waste management - Component of E waste management - Technologies for recovery of resources from electronic waste.

TEXT BOOK

- Alexis Leon and Mathews Leon, *Fundamentals of Information Technology,* 2nd Edition, Vikas Publisher, 2009 (UNIT-I).
- Deitel & Deitel, *Internet & World Wide Web - How to program*, Pearson Education, 2012 (UNIT-II).
- Asoke K Talukder, Roopa R Yavagal, *Mobile Computing, Technology Applications and Service creation*, Tata McGraw - Hill Publishing company New Delhi 2007 (UNIT-III).
- Maozhen Li, Mark Baker, *The Grid: Core Technologies,* John Wiley & Sum 2005 (UNIT-IV)
- Johri R., *E-waste: implications, regulations, and management in India and current global best practices*, TERI Press, New Delhi. (UNIT – V)

REFERENCE BOOK

- Suman Singh, *Emerging Trends in Information Technology,* ABS Books, 2020.
- Ashok kumar sahu and Rabindra kumar Mahapatra, *Trends and Impact of Information Technology in Librarie,* Ess Ess Publications, 1st Edition, 2016.

WEBLIOGRAPHY

- https://www.edx.org/course/information-technology-foundations
- http://techined.ualberta.com
- http://edtech.education.uconn.edu
- http://connect.comptia.org
- http://www.softwaretrends.com

Mapping					
	PO1	**PO2**	**PO3**	**PO4**	**PO5**
CO1	H	H	H	M	M
CO2	H	H	H	M	M
CO3	H	H	H	M	M
CO4	H	M	H	L	M
CO5	H	H	L	M	H

H-High; M-Medium; L-Low

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NON MAJOR ELECTIVE - II

AUCSN2 - COMPUTER FOR DIGITAL ERA

(Offered to other department Students)

Hours : 2 **Credits : 2**
Semester : VI

Preamble

This course helps the students to know about the Computer Fundamentals, Networks and E-Governances.

Course Outcomes

On successful completion of the course, the students will be able to

CO	Description of COs	Blooms' Taxonomy Level
CO1	Get an idea about computer and apply the computing technology in their day to day life.	Knowledge (Level K1) Applications(Level K3)
CO2	Acquire the knowledge about digital India initiatives to their surroundings.	Knowledge (Level K1)
CO3	Identify the areas extend the digital computing for their benefits.	Comprehension (Level K2)
CO4	To understand about the E- learning and Security issues.	Comprehension (Level K2) Applications(Level K3)
CO5	To create awareness about MOOC, SWAYAM, NPTEL courses.	Analysis(Level K4) Synthesis(Level K5)

COURSE CONTENT

UNIT-I:

FUNDAMENTALS OF COMPUTERS : The role of computers in the modern society – Types of Computers and their specifications – Server – Desk Top Computers - Lap Top – Tablet – Smart Phones - Block diagram of Digital Computer –Working Principle of Computer, I/O Devices – Central Processing Unit – Types of Memory - Display – Port – UPS – Setting up and Maintenance of Computer.

UNIT-II:

TYPES OF SOFTWARE : Types of Software with examples – System Software – Application Software – Utility Software - Operating System – Basics on Windows – Introduction to Android – Application - Software - Free Open source software – Database and its applications.

UNIT-III:

Introduction to computer networks – LAN – WAN – MAN – Wired and wireless network – WiFi Networks - Network Devices – Modem – Switch – Router – Broad Band – Leased Lines Internet – WWW – URL- Browser – e-mail – SMS – MMS - Client Server Computing

UNIT-IV:

E GOVERNANCE IN INDIA: E-Governance initiative by the Government – Digital India Platform – Agencies enabling Digital India - Electronic Payment and Receipt – Digital Locker – e-district service – electronic signature service – Digital AIIMS – India BPO Scheme – Integrated Nutrient Management – GIS – Mobile Seva App Store- GARV- Grameen Vidyutikaran.

UNIT-V:

E -LEARNING AND MOOC: E – Learning – Digital Library – E- Journals – Introduction to MOOC – Edex – Course era etc -SWAYAM – NPTEL – Cyber Security – Virus – Malware – Network Security - Hacking – Big Data – Data Analytics – Social Networks – Social Media Analytics- Introduction to IT Act.

TEXT BOOK

- E- Materials of Manonmaniam Sundaranar University on "*Computer for Digital Era*",
- http://msuniv.ac.in

REFERENCE BOOK

- Andrew S.Tanenbawm, *Computer Network* by, PHI, 4th Edition, 2003.
- Gautam shroff, *Enterprise cloud computing technology, Architecture, Applications*, Cambridge University Press, First Edition, 2010.

WEBLIOGRAPHY

- https://www.swayam.gov.in
- https://www.meity.gov.in
- https://www.cleartax.in
- http://www.digitalindia.gov.in
- https://www.mooc.org
- https://www.edx.org

Mapping					
	PO1	**PO2**	**PO3**	**PO4**	**PO5**
CO1	H	H	L	H	H
CO2	H	H	M	H	H
CO3	H	H	L	H	M
CO4	H	H	M	H	H
CO5	H	H	H	H	H

H-High; M-Medium; L-Low

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EXTRA CREDIT PAPER

UGEGC - GREEN COMPUTING

Credits : 2
Semester : I

Preamble

This course obtains the students to acquire the knowledge on green computing in IT.

Course outcomes

On successful completion of the course the students will be able to

CO	Description of COs	Blooms' Taxonomy Level
CO1	Discuss about basic concepts of green computing.	Knowledge (Level K1)
CO2	Describe green IT in relation to technology	Comprehension (Level K2)
CO3	Evaluate IT use in relation to environmental perspectives.	Application (Level K3)
CO4	Analyze the role of Electric Utilities.	Analysis (Level K4)
CO5	Use methods and tools to measure energy consumption.	Application (Level K3) Analysis (Level K4)

COURSE CONTENT

UNIT - I:

The Importance of Green IT: The Growing Significance of Green IT and Green Data Centers - All Companies Can Take Basic Steps-Toward Green IT. The Basics of Green IT: Important Steps for Green IT - Tools for IT Energy Measurement, Monitoring, and Management.

UNIT - II:

Collaboration Is Key for Green IT: IT Technology Vendors – Data Center Design and Build Businesses - Collaboration of Building Energy Management and IT Energy Management - IT Vendors

and Collaboration - Energy Manager Software - Global Significance of Energy - Efficiency Certificate Program- Al Gore and Green Collaboration.

UNIT - III:

The Role of Electric Utilities: The Significant Role of Electric Utilities and IT Energy Ratings in Green IT- Energy Utility Rate Case Incentives - Using Utility Rebates to Minimize Energy Costs in the Data Center- Power Company Incentives for Companies to Go Green - Energy - Efficiency Ratings for IT - IT Vendors Help Lead the Charge Virtualization.

UNIT - IV:

Chillers, Cooling Tower Fans and Cooling Equipments: Starting with the Data Center Cooling Basics -Data Center Stored Energy Including Stored Cooling - Back to the Future - Water-Cooled Servers - Strategies for Increasing Data Center Cooling Efficiency - Fuel Cells for Data Center Electricity - Other Emerging Technologies for Data Centers.

UNIT - V:

Case Study Green IT Energy Utilities - Universities and a Large Company - Worldwide Green IT.

TEXT BOOK :

- John Lamb, *The Greening of IT: How Companies Can Make a Difference for the Environment,* 1st Edition, Pearson, 2009.

REFERENCE BOOK:

- Bud E.Smith, Green Computing: Tools and Techniques for Saving Energy, Money, and Resources, 1st Edition, Auerbach Publications, 2013.

WEBLIOGRAPHY

- https://onlinecourses.nptel.ac.in/noc22_ar12/preview
- https://www.edx.org
- http://data.conferenceword.in
- http://www.researchgate.net
- http://whitecode.in

Mapping					
	PO1	**PO2**	**PO3**	**PO4**	**PO5**
CO1	H	H	H	H	M
CO2	H	H	H	H	H
CO3	H	M	H	L	H
CO4	H	H	L	H	M
CO5	H	M	H	H	M

H-High; M-Medium; L-Low

****

EXTRA CREDIT PAPER

UGET - TALLY LAB

Credits : 2
Semester : III

Preamble

This course facilitates the students to inculcate knowledge on creation, alteration, accounting voucher entries in Tally.

Course Outcomes

On successful completion of the course, the students will be able to

CO	Description of COs	Blooms' Taxonomy Level
CO1	Get idea about creation and alteration of company profile	Knowledge (Level K1)
CO2	Understand and apply various accounting voucher entries	Application (Level K3) Knowledge (Level K1)
CO3	Acquire the knowledge in bank reconciliation statement preparation and stock summary.	Comprehension (Level K2)
CO4	Designed to impart knowledge regarding concepts of Financial Accounting.	Application (Level K3)
CO5	Required skills and can also be employed as Tally data entry operator.	Analysis (Level K4)

PROGRAM LIST

1. Company Creation & Accounts master creation
2. Voucher Entry (2 Programs)
3. Day Book preparation
4. Preparation of Trial Balance
5. Preparation of Final Accounts (Profit & Loss A/c & Balance Sheet)

WEBLIOGRAPHY

- http://cleartax.in
- http://tallysolutions.com
- http://help.tallysolutions.com
- http://tallyerp9book.com

Mapping					
	PO1	**PO2**	**PO3**	**PO4**	**PO5**
CO1	H	H	H	H	M
CO2	H	H	H	M	L
CO3	H	H	M	L	H
CO4	H	H	H	M	M
CO5	H	H	M	M	H

H-High; M-Medium; L-Low

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EXTRA CREDIT PAPER

UGEMA - MULTIMEDIA AND ITS APPLICATIONS

Credits : 2
Semester : V

Preamble

This course facilitates the student understand the concept of Multimedia and can able to work with the current multimedia applications.

Course Outcomes

On successful completion of the course, the students will be able to

CO	Description of COs	Blooms' Taxonomy Level
CO1	Define multimedia to potential clients.	Knowledge (Level K1)
CO2	Identify and describe the function of the general skill sets in the multimedia industry.	Knowledge (Level K1) Comprehension (Level K2)
CO3	Identify the basic components of multimedia building blocks.	Analysis (Level K4)
CO4	Work with sound, Image, Animation and Video.	Application (Level K3)
CO5	Knowledge about the applications of Multimedia.	Application (Level K3) Analysis (Level K4)

COURSE CONTENT

UNIT-I:

Multimedia—An Overview: Introduction – Multimedia Presentation and Production – Characteristics of a Multimedia Presentation – Multiple Media – Utilities of Multisensory Perception – Hardware and Software Requirements – Uses of Multimedia – Steps for Creating a Multimedia Presentation

UNIT-II:

Text : Introduction – Types of Text – Unicode Standard – Font – Insertion of Text – Text Compression – File Formats.

UNIT – III:

Image : Introduction – Image Types – Seeing Color – Color Models – Basic Steps for Image Processing.

UNIT-IV:

Audio : Introduction – Acoustics – Nature of Sound Waves – Microphone – Amplifier – Loudspeaker – Audio Mixer – Digital Audio.

UNIT-V:

Video : Introduction – Analog Video Camera – Transmission of Video Signals – Video Signal Formats – Video Editing – Video Editing Software.

TEXT BOOKS:

- Ranjan Parekh, *Principles of Multimedia,* 2nd Edition, McGraw Hill Education,2017.

REFERENCE BOOK:

- David Hillman, *"Multimedia Technology and Applications",* Galgotia Publications Pvt. Ltd., 1998.

WEBLIOGRAPHY

- https://www.edx.org
- http://www.mediaeng.com
- http://multimediasources.weebly.com
- http://includehelp.com
- http://developer.mozilla.org

Mapping					
	PO1	**PO2**	**PO3**	**PO4**	**PO5**
CO1	H	H	H	H	M
CO2	H	H	H	H	H
CO3	H	M	H	L	H
CO4	H	H	L	H	M
CO5	H	M	H	H	M

H-High; M-Medium; L-Low

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VALUE ADDED COURSE

AUCSHT - HARDWARE AND TROUBLESHOOTING

Hours : 30 **CIA : 100**
Semester : II

Preamble

This course facilitates the student understand the concept of Hardware and Trouble shooting and can able to work with the current trouble shooting system.

Course Outcomes

On successful completion of the course, the students will be able to

CO	Description of COs	Blooms' Taxonomy Level
CO1	Obtaining knowledge of troubleshoot the hardware components of a computer.	Knowledge (Level K1)
CO2	Comprehending the troubleshooting techniques for storage devices, input and output devices.	Comprehension (Level K2)
CO3	Applying the troubleshooting techniques for hardware failures.	Application (Level K3)
CO4	Examining the troubleshooting techniques in Network, Printers and Mother board.	Analysis (Level K4)
CO5	Assembling a new system with standard hardware component	Synthesis (Level K5)

COURSE CONTENT

UNIT - I: Introduction:

Mother boards & its types-ports, slots, connectors, add on cards, power supply units and cabinet types.

UNIT - II: Storage Devices:

Primary & Secondary storage medium-magnetic disc, RAM, ROM, PROM, EPROM, Floppy, CD-ROM,CD-R/W, DVD.

UNIT - III: Hardware Troubleshooting:

Printers, Floppy drive, Microphone.

UNIT - IV: Hardware Troubleshooting:

Scanner, Network, Hardware failure, Testing, CMOS, CDROM, Hard disk drive

UNIT - V: Hardware Troubleshooting:

Monitor, Mother Board, Sound Card and Video Card.

TEXT BOOK:

- Stephen J.Bigelow, *Trouble Shooting, maintaining and Repairing* PCs‖, Tata McGraw-Hill, New Delhi, 2001.

REFERENCE BOOKS:

- Craig Zacker& John Rourke, ―The Complete Reference: PC Hardware, Tata McGraw-Hill, New Delhi, 2001
- Mike Meyers, ―Introduction to PC Hardware and Trouble Shooting, Tata McGraw Hill, New Delhi, 2003.
- B.Govindarajulu, ―IBM PC and Clones Hardware Trouble Shooting and Maintenance, Tata McGraw-Hill, New Delhi, 2002.

WEBLIOGRAPHY

- https://www.edx.org
- https://www.pluralsight.com
- https://www.makeuseof.com
- https://www.computerhope.com
- https://www.techtarget.com

Mapping					
	PO1	**PO2**	**PO3**	**PO4**	**PO5**
CO1	M	H	M	H	M
CO2	H	H	H	M	H
CO3	H	M	H	L	H
CO4	M	H	L	H	M
CO5	H	M	H	H	L

H-High; M-Medium; L-Low

****

VALUE ADDED COURSE

AUCSADPL - APPLICATION DEVELOPMENT IN PROGRAMMING LANGUAGES

Hours : 30 **CIA : 100**
Semester : IV

Preamble

This course facilitates the student understand the concept of Application Development in Programming Languages and can able to work with the current Programming Languages.

Course Outcomes

On successful completion of the course, the students will be able to

CO	Description of COs	Blooms' Taxonomy Level
CO1	Acquiring the knowledge of Application Development in Programming Languages	Knowledge (Level 1)
CO2	Understanding the concept of interpreter and Compiler	Comprehension (Level 2)
CO3	Illustrating categories of programming languages	Application (Level 3)
CO4	Correlating various programming languages used in popular website	Analysis (Level 4)
CO5	Developing simple applications in structured and object oriented Programming Languages.	Creation (Level 6

COURSE CONTENT

UNIT - I:

Introduction- Categories of Programming Languages - Interpreted Programming Languages: Introduction – Examples - Advantages and disadvantages. Compiled Programming Languages: Introduction – Advantages and Disadvantages – Examples.

UNIT - II:

Functional Programming Languages: Introduction – Categories –Examples.

Scripting Languages: Introduction- Advantages – Disadvantages- Examples.

Markup Languages: Introduction –Examples.

UNIT - III:

Application Development in Structured Programming

UNIT - IV:

Application Development in Object Oriented Programming

UNIT - V:

Programming Languages used in most popular websites: Google.com Facebook.comYouTube.com –Yahoo-Amazon.Com – Wikipedia.org- Twitter.com – Linkedin.com.

TEXT BOOK:

- Robert W.Sebesta, "Concepts of Programming Languages", Tenth Edition, Pearson Education India, 2013.
- Mandhir Verma, *"An Indroduction to Principles of Programming Languages"*, Vayu Education of India, 2013.

REFERENCE BOOKS:

- Terrance W. Pratt, Marvin V.Zelkowitz, T.V.Gopal, *"Programming Languages Design and Implementation"*, fourth edition, Pearson Education India, 2006.
- Kenneth C.Louden, Kenneth A. Lambert, *"Programming Language Principles and Practics",* 3rd Edition, 2012.

WEBLIOGRAPHY

- https://www.edx.org
- https://www.typesnuses.com/types-of-programming-languages-with-differences/
- https://en.wikipedia.org/wiki/C_(programming_language)
- https://en.wikipedia.org/wiki/Object-oriented_programming
- https://en.wikipedia.org/wiki/Programming_languages_used_in_most_popular_we

Mapping					
	PO1	**PO2**	**PO3**	**PO4**	**PO5**
CO1	L	H	M	H	L
CO2	H	M	H	M	H
CO3	M	M	H	L	H
CO4	H	H	L	H	M
CO5	H	M	H	H	M

H-High; M-Medium; L-Low

****

VALUE ADDED COURSE

AUCSCDE - COMPUTER FOR DIGITAL ERA

Hours : 30 **CIA : 100**
Semester : VI

Preamble

This course facilitates the student understand the concept of current Digital system and can able to work with the current technologies.

Course Outcomes

On successful completion of the course, the students will be able to

CO	Description of COs	Blooms' Taxonomy Level
CO1	Get an idea about computer and apply the computing technology in their day to day life.	Knowledge (Level K1) Applications(Level K3)
CO2	Acquire the knowledge about digital India initiatives to their surroundings.	Knowledge (Level K1)
CO3	Enhancing the digital skill-set required in workplace.	Comprehension (Level K2)
CO4	To understand about the E- learning and Security issues.	Comprehension (Level K2) Applications(Level K3)
CO5	To create awareness about MOOC, SWAYAM, NPTEL courses.	Analysis(Level K4) Synthesis(Level K5)

COURSE CONTENT

UNIT-I:

INTRODUCTION TO COMPUTER NETWORKS – LAN – WAN – MAN – Wired and wireless network – WiFi Networks - Network Devices – Modem – Switch – Router – Broad Band – Leased Lines Internet.

UNIT-II:

INTERNET: WWW – URL- Browser – e-mail – SMS – MMS - Client Server Computing.

UNIT-III:

E GOVERNANCE IN INDIA: E-Governance initiative by the Government – Digital India Platform –GIS – Mobile Seva App Store- GARV- Grameen Vidyutikaran.

UNIT-IV:

E -LEARNING AND MOOC: E – Learning – Digital Library – E- Journals – Introduction to MOOC – Edex – Course era etc -SWAYAM – NPTEL .

UNIT-V:

CYBER SECURITY – Virus – Malware – Network Security - Hacking – Big Data – Data Analytics – Social Networks – Social Media Analytics- Introduction to IT Act.

TEXT BOOK:

- E- Materials of Manonmaniam Sundaranar University on "*Computer for Digital Era*",
- http://msuniv.ac.in

REFERENCE BOOKS:

- Andrew S.Tanenbawm, *Computer Network* by, PHI, 4th Edition, 2003.
- Gautam shroff, *Enterprise cloud computing technology, Architecture, Applications*, Cambridge University Press,First Edition, 2010.

WEBLIOGRAPHY

- https://www.swayam.gov.in
- https://www.mooc.org
- http://www.digitalindia.gov.in
- https://www.edx.org
- https://www.meity.gov.in
- https://www.cleartax.in

Mapping					
	PO1	**PO2**	**PO3**	**PO4**	**PO5**
CO1	H	L	M	H	M
CO2	H	M	H	M	H
CO3	M	L	H	L	H
CO4	H	H	L	H	M
CO5	H	M	H	H	L

H-High; M-Medium; L-Low

****

VALUE ADDED COURSE

QUESTION PATTERN :

Section – A

Seven questions are to be given. Five questions are to be answered**. 5 x 20 = 100 marks**

Total marks = 100