DEPARTMENT OF COMPUTER SCIENCE

COURSE STRUCTURE & SYLLABI
(For the students admitted from year 2023-2024 onwards)

Programme: Computer Applications (BCA)

SHOW US THE RIGHT PATH
Since 1951

JAMAL MOHAMED COLLEGE (AUTONOMOUS)
Accredited with A++ Grade by NAAC (4th Cycle) with CGPA 3.69 out of 4.0
(Affiliated to Bharathidasan University)
TIRUCHIRAPPALLI – 620 020

B.C.A

Sem	Course Code	Part	Course Category	Course Title	Ins. Hrs/ Week	Credit	Marks		Total
							CIA	ESE	
I	23U1LT1/LA1/LF1/ LH1/LU1	I	Language - I		6	3	25	75	100
	23UCN1LE1	II	English - I	English for Communication - I	6	3	25	75	100
	23UCA1CC1	III	Core - I	Programming in C	5	5	25	75	100
	23UCA1CC2P		Core - II	Programming in C Lab - Practical	3	3	20	80	100
	23UCA1AC1		Allied - I	Numerical and Statistical Methods	5	4	25	75	100
	23UCA1AC2		Allied - II	Digital Electronics	3	2	25	75	100
	23UCN1AE1	IV	AECC - I	Value Education	2	2	-	100	100
				Total	**30**	**22**			**700**
II	23U2LT2/LA2/LF2/ LH2/LU2	I	Language - II		6	3	25	75	100
	23UCN2LE2	II	English - II	English for Communication - II	6	3	25	75	100
	23UCA2CC3	III	Core - III	Programming in Java	5	5	25	75	100
	23UCA2CC4P		Core - IV	Programming in Java Lab - Practical	3	3	20	80	100
	23UCA2AC3		Allied - III	Operations Research	5	4	25	75	100
	23UCA2AC4		Allied - IV	Game Theory and Its Applications	3	2	25	75	100
	23UCN2SS	IV	Soft Skills Development	Soft Skills Development	2	2	-	100	100
	23UCN2CO	V	Community Outreach	JAMCROP	-	-	-	-	@
	23U4BT1 / 23U4AT1		Basic Tamil - II / Advanced Tamil - II	எழுத்தும் இலக்கியமும் அறிமுகம் - I / தமிழ் இலக்கியமும் வரலாறும் - I /	-	-	-	100 #	-
	@Only grades will be given			**Total**	**30**	**22**			**700**
III	23U3LT3/LA3/LF3/ LH3/LU3	I	Language - III		6	3	25	75	100
	23UCN3LE3	II	English - III	English for Communication - III	6	3	25	75	100
	23UCA3CC5	III	Core - V	Data Structures	4	4	25	75	100
	23UCA3CC6P		Core - VI	Data Structures Lab - Practical	3	3	20	80	100
	23UCA3AC5		Allied - V	Principles of Accountancy	4	4	25	75	100
	23UCA3AC6P		Allied - VI	Accounting Package Lab - Practical	3	2	20	80	100
	23UCA3GE1	IV	Generic Elective - I		2	2	-	100	100
	23UCN3AE2		AECC - II	Environmental Studies	2	2	-	100	100
				Total	**30**	**23**			**800**
IV	23U4LT4/LA4/LF4/ LH4/LU4	I	Language - IV		6	3	25	75	100
	23UCN4LE4	II	English - IV	English for Communication - IV	6	3	25	75	100
	23UCA4CC7	III	Core - VII	Database Management Systems	6	6	25	75	100
	23UCA4CC8P		Core - VIII	RDBMS Lab - Practical	3	3	20	80	100
	23UCA4AC7		Allied - VII	Scripting Languages	4	4	25	75	100
	23UCA4AC8P		Allied - VIII	Scripting Languages Lab - Practical	3	2	20	80	100
	23UCA4GE2	IV	Generic Elective - II		2	2	-	100	100
	23UCN4EL		Experiential Learning	Internship	-	2	-	100	100
	23UCN4EA	V	Extension Activities	NCC, NSS, etc.	-	1	-	-	-
	23U4BT2 / 23U4AT2		Basic Tamil - II / Advanced Tamil - II	எழுத்தும் இலக்கியமும் அறிமுகம் - II / தமிழ் இலக்கியமும் வரலாறும் - II	-	-	-	100 #	-
				Total	**30**	**26**			**800**
V	23UCA5CC9	III	Core - IX	Software Engineering	6	6	25	75	100
	23UCA5CC10		Core - X	Operating Systems	5	5	25	75	100
	23UCA5CC11		Core - XI	Python Programming	5	5	25	75	100
	23UCA5CC12P		Core - XII	Python Programming Lab - Practical	4	4	20	80	100
	23UCA5DE1A/B		Discipline Specific Elective - I (a)		4	4	10	40	50
	23UCA5DE1AP/BP		Discipline Specific Elective - I (b)		2	1	10	40	50
	23UCA5SE1	IV	Skill Enhancement Course - I	Digital Marketing	2	1	-	100	100
	23UCA5SE2P		Skill Enhancement Course - II	Digital Marketing Lab - Practical	2	1	-	100	100
	23UCA5EC1		Extra Credit Course - I *	Online Course	-	*	-	-	-
				Total	**30**	**27**			**700**
VI	23UCA6CC13	III	Core - XIII	Data Communications and Networking	5	5	25	75	100
	23UCA6CC14T		Core - XIV (a)	Web Framework	4	4	10	40	50
	23UCA6CC14P		Core - XIV (b)	Web Framework Lab - Practical	2	2	10	40	50
	23UCA6CC15		Core - XV	Cyber Security	5	5	25	75	100
	23UCA6PW		Project Work	Project Work	5	4	-	100	100
	23UCA6DE2A/2B		Discipline Specific Elective - II		4	4	25	75	100
	23UCA6DE3AP/BP		Discipline Specific Elective - III		4	3	20	80	100
	23UCN6AE3	IV	AECC - III	Gender Studies	1	1	-	100	100
	23UCA6EC2		Extra Credit Course - II *	Online Course	-	*	-	-	-
	23UCAECA		Extra Credit Course for all **	Online Course	-	*	-	-	-
	*** Programme Specific Online Course for Advanced Learners** **** Any Online Course for Enhancing Additional Skills**			**Total**	**30**	**28**			**700**
					Grand Total	**148**			**4400**

GENERIC ELECTIVE COURSES

Semester	Course Code	Course Title
III	23UCA3GE1	Office Automation
IV	23UCA4GE2	Image Editing Tools

Self-Study Course – Basic and Advanced Tamil

(Applicable to the candidates admitted from the academic year 2023 -2024 onwards)

Semester	Course Code	Course Title
II	23U2BT1	Basic Tamil – I (எழுத்தும் இலக்கியமும் அறிமுகம் - I)
	23U2AT1	Advanced Tamil – I (தமிழ் இலக்கியமும் வரலாறும் - I)
IV	23U4BT2	Basic Tamil – II (எழுத்தும் இலக்கியமும் அறிமுகம் - II)
	23U4AT2	Advanced Tamil – II (தமிழ் இலக்கியமும் வரலாறும் - II)

Mandatory

Basic Tamil Course - I and II are offered for the students who have not studied Tamil Language in their schools and college.

Advanced Tamil Course - I and II are offered for those who have studied Tamil Language in their schools but have opted for other languages under Part - I.

DISCIPLINE SPECIFIC ELECTIVES

Semester	Course Code	Course Title
V	23UCA5DE1A	VB .Net
	23UCA5DE1B	C# .Net Programming
	23UCA5DE1AP	VB .Net Lab - Practical
	23UCA5DE1BP	C# .Net Programming Lab - Practical
VI	23UCA6DE2A	PHP Programming
	23UCA6DE2B	Data Science using R
	23UCA6DE3AP	PHP Programming Lab - Practical
	23UCA6DE3BP	R Programming Lab - Practical

Semester	Course Code	Course Category	Hours/ Week	Credits	Marks for Evaluation		
					CIA	ESE	Total
I	23UCA1CC1	CORE – I	5	5	25	75	100

Course Title	Programming in C

SYLLABUS		
Unit	**Contents**	**Hours**
I	Getting Started with C - C Instructions– Decision Control Structure: The if Statement – The if-else Statement - Use of Logical Operators - * The Conditional Operators *	**15**
II	The Loop Control Structure: The while Loop –The for Loop – The break Statement – The continue Statement – The do-while Loop – The odd loop. Case Control Structure: Decisions using switch – switch Versus if-else Ladder - *The goto keyword*.	**15**
III	Functions and Pointers: Passing values between Functions – Scope Rule of Functions – Calling Convention – Using Library Functions – Advanced Features of Functions – *Adding Functions to the Library *. The C Preprocessor: Features of C Preprocessor – Macro Expansion – File Inclusion – Conditional Compilation – if and elif Directives – Miscellaneous Directives – The Build Process.	**15**
IV	Arrays – More on Arrays – Pointers and Arrays – Two dimensional Arrays – Array of Pointers – Three-Dimensional Array Strings: More about Strings – Pointers and Strings – Standard Library String Functions – Two-Dimensional Array of Characters – *Array of Pointers to Strings* – Limitation of Array of Pointers to Strings.	**15**
V	Structures: Array of Structures – Additional Features of Structures – Uses of Structures. Console Input / Output –Types of I/O – Console I/O Functions. File Input / Output: Data Organization – File Operations – Counting Characters, Tabs, Spaces – A File-Copy Program – File Opening Modes. – * String (Line) I/O in Files * - Record I/O in Files	**15**
VI	**Current Trends (For CIA only) –** Debugging with GDB, Random numbers, Simulation	

…… Self Study

Text Book(s):

YashavantKanetkar, Let Us C, BPB Publications, New Delhi, 13th Edition, 2013

Reference Book(s):

1. E. Balagurusamy, Programming in ANSI C, Tata McGraw Hill Education Private Ltd., Fifth Edition, 2011.
2. D. Ravichandran, Programming in C, New Age International (P) Ltd., First Edition, 1996.

Web Resource(s):

1. https://www.programiz.com/c-programming.

Course Outcomes		
Upon successful completion of this course, the student will be able to:		
CO No.	**CO Statement**	**Cognitive Level (K-Level)**
CO1	Use C language as the base for higher level course in programming	**K1**
CO2	Understand the basic constructs of programming languages	**K2**
CO3	Apply structured approach in program design	**K3**
CO4	Apply suitable logic in solving problems	**K3**
CO5	Develop applications to solve real world problems	**K5**

Relationship Matrix:

Course Outcomes (COs)	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of COs
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PSO1**	**PSO2**	**PSO3**	**PSO4**	**PSO5**	
CO1	2	3	2	3	3	3	2	3	0	2	2.3
CO2	2	2	2	2	2	2	2	2	2	2	2.0
CO3	3	3	3	2	2	3	3	2	2	2	2.5
CO4	3	2	3	3	2	2	3	3	2	3	2.6
CO5	2	2	1	3	3	2	1	3	3	3	2.3
									Mean Overall Score		2.34
									Correlation		High

Mean Overall Score = Sum of Mean Score of Cos / Total Number of Cos

Mean Overall Score	Correlation
< 2	Low
≥ 2 and < 2	Medium
≥ 2	High

Course Coordinator: Dr. O. S. Abdul Qadir

Semester	Course Code	Course Category	Hours/ Week	Credits	Marks for Evaluation		
					CIA	ESE	Total
I	23UCA1CC2P	CORE – II	3	3	20	80	100

Course Title	Programming in C Lab - Practical

Write a Program in C

1. Using assignment statements
2. Using assignment statements
3. To demonstrate Logical operators
4. Using While, Do-While & For Loop
5. Using Switch
6. To illustrate the use of Functions& Pointers
7. Using Macro definitions to test whether a character is uppercase or lowercase
8. To make use of arrays
9. To manipulate Strings
10. To manipulate String
11. Using console, I/O Functions.
12. Using console, I/O Functions.

Course Outcomes		
Upon successful completion of this course, the student will be able to:		
CO No.	**CO Statement**	**Cognitive Level (K-Level)**
CO1	Apply the control statements to solve the simple problems	**K3**
CO2	Apply the functions and pointers to solve the real time tasks	**K3**
CO3	Apply the Macro functions and illustrate	**K3**
CO4	Implements I/O functions, solve day to day to problems	**K3**
CO5	Create a real time applications using Streams	**K5**

Relationship Matrix:

Course Outcomes (COs)	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of COs
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PSO1**	**PSO2**	**PSO3**	**PSO4**	**PSO5**	
CO1	3	2	3	2	3	3	0	2	3	3	2.4
CO2	2	2	2	2	3	2	3	0	2	3	2.1
CO3	3	2	2	2	3	2	3	0	2	3	2.2
CO4	2	2	3	0	2	3	2	3	3	3	2.3
CO5	3	3	0	2	3	0	2	3	2	3	2.1
										Mean Overall Score	2.22
										Correlation	High

Mean Overall Score = Sum of Mean Score of Cos / Total Number of Cos

Mean Overall Score	Correlation
< 2	Low
≥ 2 and < 2	Medium
≥ 2	High

Course Coordinator: Dr. O. S. Abdul Qadir

Semester	Course Code	Course Category	Hours/ Week	Credits	Marks for Evaluation		
					CIA	ESE	Total
I	23UCA1AC1	ALLIED – I	5	4	25	75	100

Course Title	Numerical and Statistical Methods

SYLLABUS

Unit	Contents	Hours
I	Solution of algebraic and transcendental equations- Bisection method- Method of Successive Approximation or the Iteration method– * Newton Raphson Method * (This unit contains Problems only).	**15**
II	Solution of System of Linear Equations – Gauss Elimination Method, Gauss Jordan Method, Gauss Jacobi Method– *Gauss Seidel Method*(This unit contains Problems only).	**15**
III	Measures of Central Tendency – Measures of Dispersion-*Measures of skewness*. (This unit contains Problems only).	**15**
IV	Theory of Probability – Definitions of Probability – Sample Space –* Probability of an Event *– Independence of Events – Theorems on Probability – Conditional Probability – Baye's Theorem	**15**
V	Correlation (two variables only) – Karl Pearson's Correlation Coefficient and its properties. Spearman's rank correlation coefficient (repeated and non-repeated). Lines of regression – Definition – ***** Properties of regression coefficients ***** – Simple problems.	**15**

…… Self Study

Text Book(s):

1. Dr. P. Kandasamy, Dr. K. Thilagavathy, Dr. K. Gunavathi, Numerical Methods, S. Chand, First Edition, 2008
2. S.C. Gupta, V.K. Kapoor, Fundamentals of Mathematical Statistics, Sulthan Chand & Sons, Eleventh Edition, 2002.

UNIT I : Chapter 3 – Section 3.1, 3.2, 3.4 **(T.B.1)**
UNITII : Chapter 4 - Section: 4.2,4.8, 4.9 **(T.B.1)**
UNITIII : Chapter 2 - Section: 2 to 2.9 Chapter 3 – Section 3.3 to 3.7, 3.13 **(T.B.2)**
UNITIV : Chapter 4 - Section-4.5 to 4.8 **(T.B.2)**
UNITV : Chapter 10 - Section: 10.3, 10.6, 10.7.1, 10.7.3, 10.7.4**(T.B.2)**

Reference Book(s):

1. S.S. Sastry, Introductory Methods of numerical analysis, Prentice Hall of India Pvt. Ltd., 2004
2. S.C. Gupta, V.K. Kapoor, Elements of Mathematical Statistics, Sultan Chand & Sons, 2009

Web Resource(s):

1. https://nptel.ac.in/courses/111107105
2. https://nptel.ac.in/courses/111/106/111106112/

Course Outcomes		
Upon successful completion of this course, the student will be able to:		
CO No.	**CO Statement**	**Cognitive Level (K-Level)**
CO1	Remember methods for algebraic and transcendental equations with examples	**K1**
CO2	Demonstrate and discuss System of Linear Equations with examples	**K2**
CO3	Apply domain knowledge for Measures of Central Tendency and skewness.	**K3**
CO4	Examine and illustrate the examples of Conditional Probability	**K4**
CO5	Classification and study of Bivariate distributions with examples.	**K5**

Relationship Matrix:

Course Outcomes (COs)	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of COs
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PSO1**	**PSO2**	**PSO3**	**PSO4**	**PSO5**	
CO1	3	1	2	3	1	3	2	1	3	3	2.2
CO2	2	2	3	2	1	3	3	2	3	1	2.2
CO3	3	2	3	2	2	2	2	2	2	3	2.3
CO4	2	1	3	2	3	3	2	3	3	3	2.5
CO5	2	3	3	1	2	3	2	3	2	3	2.4
										Mean Overall Score	2.32
										Correlation	Medium

Mean Overall Score = Sum of Mean Score of Cos / Total Number of Cos

Mean Overall Score	**Correlation**
< 2	Low
≥ 2 and < 2	Medium
≥ 2	High

Course Coordinator: Dr. V. Krishnan

Semester	Course Code	Course Category	Hours/ Week	Credits	Marks for Evaluation		
					CIA	ESE	Total
I	23UCA1AC2	Allied - II	3	2	25	75	100

Course Title	Digital Electronics

SYLLABUS		
Unit	**Contents**	**Hours**
I	Number Systems and Codes: Binary, Decimal, Octal and hexadecimal number systems – Conversion from one system to another – Binary Addition – Binary Subtraction –* Sign-magnitude numbers and 2's complement representation * - Binary subtraction using Complements - SubBinary Code (8421, Gray, Excess-3)	9
II	Digital Logic: The Basic Gates - AND, OR, NOT - Universal Logic Gates – NOR, NAND. Boolean Laws and Theorems –Simplification – Sum of Products Method – Karnaugh Simplification (upto 3 variables)	9
III	Combinational logic circuits: Multiplexers – Demultiplexers –Decoders -Encoders. Arithmetic Building Blocks – Half adder – Half subtractor – Full adder – Full subtractor – *Adder - subtractor*.	9
IV	Sequential Logic Circuits: Flip Flops – RS Flip Flops – D Flip Flops- T Flip Flops – JK Flip-flops - * Shift Registers (Serial-In-Serial-Out)*.	9
V	D/A and A/D Conversion – Variable Resistor Network – Binary Ladder – D/A Converter – D/A Accuracy and Resolution – A/D Converters – *Simultaneous Method *.	9
VI	**Current Trends (For CIA only):** Organization of Computer System, Memory Unit, I/O devices	

…… Self Study

Text Book(s):

Donald P Leach, Albert Paul Malvino, GoutamSaha, Digital Principles and Applications, Tata McGraw Hill Education Private Limited, New Delhi, Sixth Edition, 2002

UNIT I : Chapter 5 & 6 (6.1, 6.2, 6.4, 6.5)
UNIT II : Chapter 2 & 3
UNIT III : Chapter 4 (4.1 - 4.3 & 4.6) & 6 (6.7 - 6.8)
UNIT IV : Chapter 8 & 9
UNIT V : Chapter 12 (12.1 – 12)

Reference Book(s):

1. Thomas C. Bartee, Digital Computer Fundamentals, Tata McGraw Hill, 6th Edition, 25th Reprint, 2006.
2. M.Morris Mano, Digital Logic and Computer Design, Pearson India, 2017
3. Floyd, Digital Fundamentals, Pearson Education, 2005

Web Resource(s):

1. https://www.javatpoint.com/digital-computers
2. https://www.britannica.com/technology/digital-computer
3. https://www.pdfdrive.com/digital-computer-fundamentals-computer-architecture-e5719965.html

Course Outcomes		
Upon successful completion of this course, the student will be able to:		
CO No.	**CO Statement**	**Cognitive Level (K-Level)**
CO1	Understand the number systems and usage of Binary codes in Computer System	K1, K2
CO2	Solve the Sum of Products functions using Boolean laws and theorems	K3
CO3	Simplify the 3-variable expressions using Karnaugh Map method	K4
CO4	Explain the operating principles of combinational circuits, sequential circuits, ADC and DAC converters	K5
CO5	Evaluate Boolean expressions using gated networks	K5

Relationship Matrix:

Course Outcomes (COs)	**Programme Outcomes (POs)**					**Programme Specific Outcomes (PSOs)**					**Mean Score of COs**
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PSO1**	**PSO2**	**PSO3**	**PSO4**	**PSO5**	
CO1	3	3	2	3	1	3	3	3	3	1	2.5
CO2	3	3	2	3	2	3	2	3	2	1	2.4
CO3	3	3	3	2	1	3	3	2	3	2	2.5
CO4	2	3	3	3	2	3	3	3	2	2	2.6
CO5	3	3	3	3	2	3	2	3	3	2	2.7
										Mean Overall Score	2.54
										Correlation	High

Mean Overall Score = Sum of Mean Score of COs / Total Number of COs

Mean Overall Score	**Correlation**
< 2	Low
≥ 2 and < 2	Medium
≥ 2	High

Course Coordinator: Dr. S. Abdul Saleem

Semester	Course Code	Course Category	Hours/ Week	Credits	Marks for Evaluation		
					CIA	ESE	Total
I	23UCN1AE1	AECC - I	2	2	-	100	100

Course Title	Value Education for Men

SYLLABUS		
Unit	**Contents**	**Hours**
I	**VALUES IN LIFE:** Purpose and philosophy of life – Need for values –five fold moral culture. Values: truth, loyalty, integrity, humility, trustworthy, considerate, not being greedy, clean habits, punctuality, kindness, gratitude, patience, respect and character building.	6
II	**PERSONAL WELLBEING**: Social responsibility - taming a healthy mind and body – personal hygiene - Balanced diet – meditation – yoga - positive thinking – introspection - a passion for Nature- Win-win strategy.	6
III	**ROLE OF MEN IN FAMILY**: As a responsible student – committed employee - loyal husband - dedicated father – fatherhood- sacrificing human – considerate true friend.	6
IV	**MAN A SOCIAL BEING**: A friendly neighbour - living a life with definite motives – emotions and moral desire- uncompromising will power- puberty- secondary sexual characters- marriage: Purpose – marital life- Harmony with spouse- fidelity towards spouse.	6
V	**PROFESSIONAL VALUES**: More of a giver than a taker - being compassionate – patriotism - respecting culture - dependence on God – avoiding worry- professional ethics.	6

Hours of Teaching: 5 Hours and Hours of Activity: 25 Hours

Textbook(s):

1. Value Education for health, Happiness and harmony, the world community service centre, Vethathri Publications
2. N. Venkataiah, Value Education, APH Publishing Corporation, New Delhi, 1998
3. K.R. Lakshminarayanan and M. Umamageshwari, Value Education, Nalnilam Publication, Chennai.

Web References:

1. https://www.slideshare.net/humandakakayilongranger/values-education-35866000
2. https://www.ananda.org/blog/5-secrets-to-a-harmonious-marriage/
3. https://www.un.org/esa/socdev/family/docs/men-in-families

Activity:

- Assignment on Values (not less than 20 Pages)
- Multiple Choice Questions and Quiz
- Elocution - (Manners and good Habits for 3 to 5 minutes)
- Field Visit
- Debating - Current issues
- Essay writing: Proper use of e-gadgets, Ethics, Cyber ethics, Social media, etc.,
- Case Study / Album Making / Poster Presentation / Documentary- Celebrating National Days, Drug abuse & illicit trafficking, Independence Day, Secularism, Teachers Day, National Youth Awakening Day, Father's Day / Mother's Day and etc.,

EVALUATION COMPONENT: TOTAL: 100 MARKS

Component I:

Documentary (or) Poster Presentation (or) Elocution - 25 marks

Component II:

Quiz (or) Multiple choice questions Test - 25 marks

Component III:

Album Making (or) Case Study on a topic (or) Field visit - 25 marks

Component IV:

Assignment (or) Essay Writing (or) Debating - 25 marks

Course Coordinator: Dr. M. Purushothaman

Semester	Course Code	Course Category	Hours/ Week	Credits	Marks for Evaluation		
					CIA	ESE	Total
I	23UCN1AE1	AECC - I	2	2	-	100	100

Course Title	Value Education for Women

SYLLABUS		
Unit	**Contents**	**Hours**
I	**VALUES IN LIFE:** Purpose and philosophy of life – Need for values –five fold moral culture - Imbibing values: truth, loyalty, integrity, humility, trustworthy, considerate, not being greedy, clean habits, punctuality, kindness, gratitude, patience, respect and character building.	6
II	**FAMILY**: Nuclear – cluster – significance - social functions - changing trend - role of women in family - obedient daughter - purposeful youth- dedicated wife - caring mother.	6
III	**PUBERTY**: Need of knowledge of menstruation- menstrual symptoms – handling – menstrual disorder - maintaining good personal hygiene - motherhood- Stages of pregnancy- post pregnancy care.	6
IV	**MARRIAGE**: Types of marriage - purpose of marriage- love and infatuation – need for marital preparation - pre and post marital counselling - conflicts in marital life - divorce single parenthood.	6
V	**HARMONY WITH SPOUSE**: Husband and wife relationship - fidelity towards spouse-relationship among the family members. Tenets of bride for healthy family – kindness, respect, patience, care, love.	6

Hours of Teaching: 5 hours and Hours of Activity: 25 hours

Textbook(s):

1. Value Education for health, Happiness and harmony, the world community service centre, Vethathri Publications
2. N. Venkataiah, Value Education, APH Publishing Corporation, New Delhi, 1998
3. Betty, Carten and Meg Goldric, The Changing family life style - A Framework for Family Therapy, 2nd Edition, 2000.
4. Marie, Madearentas, Family Life Education, CREST-Centre for research education service training for family promotion, Bangalore, 1999.

Web References:

1. https://www.slideshare.net/humandakakayilongranger/values-education-35866000
2. https://www.ananda.org/blog/5-secrets-to-a-harmonious-marriage/
3. https://www.nap.edu/read/2225/chapter/14

Activity:

- Assignment on Values (not less than 20 Pages)
- Multiple Choice Questions and Quiz
- Elocution - (Manners and good Habits for 3 to 5 minutes)
- Field Visit
- Debating - Current issues
- Essay writing: Proper use of e-gadgets, Ethics, Cyber ethics, Social media, etc.,
- Case Study / Album Making / Poster Presentation / Documentary- Celebrating National Days, Drug abuse & illicit trafficking, Independence Day, Secularism, Teachers Day, National Youth Awakening Day, Father's Day / Mother's Day and etc.,

EVALUATION COMPONENT: TOTAL: 100 MARKS

Component I:

Documentary (or) Poster Presentation (or) Elocution - 25 marks

Component II:

Quiz (or) Multiple choice questions Test - 25 marks

Component III:

Album Making (or) Case Study on a topic (or) Field visit - 25 marks

Component IV:

Assignment (or) Essay Writing (or) Debating - 25 marks

Course Coordinator: Dr. M. Purushothaman

Semester	Course Code	Course Category	Hours/ Week	Credits	Marks for Evaluation		
					CIA	ESE	Total
II	23UCA2CC3	CORE – III	5	5	25	75	100

Course Title	Programming in Java

SYLLABUS		
Unit	**Contents**	**Hours**
I	Introduction – Need of object oriented programming – Principles of Object Oriented Language – Applications of OOP - History of Java – Java Essentials – Java Virtual Machine – Java Features - Java Programming Constructs: Variables – Primitive Data Types – Identifier – Literals – * Operators – Expressions * – Primitive Type conversion and Casting – Flow of Control	**15**
II	Classes and Objects: Classes – Objects – Class Declarations – Creating Objects – Methods – Constructors – Class Variables and Methods – this keyword – Arrays – Command-Line arguments - Inheritance: Inheritance VS Aggregation – Overriding Method – super keyword – * final keyword * – Abstract class	**15**
III	Interfaces, Packages and Enumerations: Interfaces – Packages – Access Protection – java.lang.Package – String class – * StringBuffer Class * - Exception: Introduction – Exception Types – Exception Handling Techniques – User Defined Exception - Multithreading: Introduction – Multithreading – java.lang.Thread – Main Thread – Creation of new Threads – Thread.State	**15**
IV	Input/Output: Introduction – java.io.File – Reading and Writing Data – Randomly Accessing a File – Serialization - Event Handing: Event Delegation Model – java.awt.event – Sources of events – Event Listeners – Adapter Classes.	**15**
V	Abstract Window Toolkit: Introduction – Components and Containers – Button – Label – Checkbox – Radio Buttons - TextField and TextArea – Container Class - Layouts: FlowLayout – GridLayout - * BorderLayout * - Menu – Scrollbar.	**15**
VI	**Current Trends (For CIA only) –** DevOps, Spring Framework, Hibernate	

…… Self Study

Text Book(s):

Sachine Malhotra, Saurabh Choudhary, Programming in Java, Oxford University Press, Revised Second Edition, 2018.

Reference Book(s):

1. P. Radha Krishna, Object Oriented Programming through JAVA, Universities Press, 2008.
2. Herbert Schildt, The Complete Reference Java, Fifth Edition, Tata McGraw-Hill, 2015.

Web Resource(s):

1. https://www.programiz.com/java-programming
2. https://www.javatpoint.com/java-tutorial

Course Outcomes		
Upon successful completion of this course, the student will be able to:		
CO No.	**CO Statement**	**Cognitive Level (K-Level)**
CO1	Understand the basic building blocks, control statements, arrays and strings in Java Programming	**K2**
CO2	Understand the concepts of classes, objects, inheritance, polymorphism, packages and interfaces	**K2**
CO3	Apply the exception handling mechanism in single and multithreaded programming	**K3**
CO4	Develop the window based programs from basic level to file operations using Applet	**K3**
CO5	Appraise the simple applications using AWT components	**K5**

Relationship Matrix:

Course Outcomes (COs)	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of COs
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PSO1**	**PSO2**	**PSO3**	**PSO4**	**PSO5**	
CO1	3	2	2	3	2	3	2	2	3	2	2.4
CO2	2	0	2	3	2	3	2	2	2	3	2.1
CO3	2	3	2	2	0	2	2	3	2	3	2.1
CO4	3	3	3	2	0	3	2	3	0	2	2.1
CO5	2	3	3	3	3	2	3	0	2	2	2.3
									Mean Overall Score		2.27
									Correlation		High

Mean Overall Score = Sum of Mean Score of Cos / Total Number of Cos

Mean Overall Score	**Correlation**
< 2	Low
≥ 2 and < 2	Medium
≥ 2	High

Course Coordinator: Mr. M. Kamal

Semester	Course Code	Course Category	Hours/ Week	Credits	Marks for Evaluation		
					CIA	ESE	Total
II	23UCA2CC4P	CORE – IV	3	3	20	80	100

Course Title	Programming in Java Lab - Practical

1. Using Control Statements
    a) Find the prime numbers between 1 to 100
    b) Count the number of digits of a given integer using while loop
    c) Find the smallest and biggest number of given 'n' elements using for loop

2. Using String handling functions
    a) Find the sum of ASCII value of your name
    b) Count the total number of vowels, consonants, and words in given sentences

3. Using class and objects
    a) To find the perimeter of circle and rectangle
    b) To illustrate the method overloading

4. To demonstrate the following inheritance
    a) Single Inheritance
    b) Multilevel inheritance

5. To demonstrate the concepts
    a) Area of the shapes (interface)
    b) Abstract Class

6. a) Using package to prepare an EB bill / Telephone bill / Student mark sheet with suitable fields
    a) To demonstrate the multiple catch clauses

7. Using Thread concept to solve the following
    a) Display the System date and time with specific time interval using extends Thread class
    b) Display a set of numbers. If 25 even numbers have been displayed stop the thread and initiate a new thread class for displaying 25 odd numbers

8. Using I/O Streams:
    a) Find the properties of a given directory name
    b) Copy of one file contents into another

9. Using awt package
    a) Draw a house using Graphics class
    b) Demonstrate the Layout Managers: FlowLayout, BorderLayout & GridLayout

10. Using AWT controls to create student bio-data form

Course Outcomes		
Upon successful completion of this course, the student will be able to:		
CO No.	**CO Statement**	**Cognitive Level (K-Level)**
CO1	Apply the control statements to solve the simple problems	**K3**
CO2	Develop the day to day applications using Inheritance, Packages, and Interface	**K3**
CO3	Illustrate the exception handling and string class methods for simple applications	**K2**
CO4	Solve the errors in the computer laboratory using I/O and networking concepts.	**K3**
CO5	Create an application for automation of real time problems using database	**K5**

Relationship Matrix:

Course Outcomes (COs)	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of COs
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PSO1**	**PSO2**	**PSO3**	**PSO4**	**PSO5**	
CO1	3	2	2	2	3	2	3	0	2	3	2.2
CO2	3	3	1	2	3	3	2	3	2	3	2.5
CO3	3	2	3	2	3	3	1	2	3	3	2.5
CO4	2	2	3	1	2	3	2	3	3	3	2.4
CO5	2	2	2	2	3	2	3	0	2	3	2.1
										Mean Overall Score	2.34
										Correlation	High

Mean Overall Score = Sum of Mean Score of Cos / Total Number of Cos

Mean Overall Score	Correlation
< 2	Low
≥ 2 and < 2	Medium
≥ 2	High

Course Coordinator: Mr. M. Kamal

Semester	Course Code	Course Category	Hours/ Week	Credits	Marks for Evaluation		
					CIA	ESE	Total
II	23UCA2AC3	ALLIED – III	5	4	25	75	100

Course Title	Operations Research

SYLLABUS

Unit	Contents	Hours
I	Introduction to Operations Research – Mathematical Formulation of the problem –Graphical Solution Method –General Linear Programming (LPP)-* Canonical and Standard forms of LPP*- Basic Solutions - Solving LPP by Using Simplex Method (Problems only)	15
II	Transportation problem –North West corner rule – *Least Cost Method* – Vogel Approximation Method–Assignment Problem– Hungarian Method (Balanced and unbalanced). (Problems only)	15
III	Sequencing Problems: Introduction – Problem of sequencing – Basic term used in sequencing – Processing 'n' Jobs through '2' machines –* Processing 'n' Jobs through 'k' machines*. (Problems only)	15
IV	Games and Strategies: Introduction- Two Person Zero-Sum Games-*Some Basic Terms-The Maximin- Minimax Principle*-– Games Without Saddle Points – Mixed Strategies – Graphic Solution of 2 X n and m X 2 Games. (Problems only)	15
V	Network scheduling by CPM – Introduction – Network and Basic Components – Logical Sequencing - Rules of Network Construction– Concurrent Activities – *Critical Path Analysis*. (Problems only)	15
VI	**Current Trends (For CIA only)** – Contemporary developments related to the course during the semester concerned.	

……. Self Study

Text Book(s):

KantiSwarup, P.K. Gupta and Man Mohan, Operations Research, Sultan Chand and Sons publishers, New Delhi,Thirteenth Edition, Reprint 2008.

UNIT I: Chapter 2,3 & 4 Sections: 2.1 – 2.4, 3.1, 3.2,3.4,3.5 ,4.1, 4.3

UNIT II: Chapter 10 & 11 Sections: 10.1, 10.2, 10.5, 10.9, 11.1, 11.2, 11.3, 11.4

UNIT III: Chapter 12 Sections 12.1 – 12.5

UNIT IV: Chapter 17 Sections: 17.1 – 17.6

UNIT V: Chapter 25 Sections: 25.1 – 25.6

Reference Book(s):

1. Sharma, S.D., "Operations Research", KedarNath Ram Nath& Co. (15th Edition), 2010.
2. Richard Bronson, Theory and Problems of Operations Research, Tata McGraw Hill Publishing Company Ltd., NewDelhi, 1982.

Web Resource(s):

1. **https://nptel.ac.in/courses/111/107/111107128/**
2. **https://epgp.inflibnet.ac.in/Home/ViewSubject?catid=25**
3. **https://onlinecourses.swayam2.ac.in/cec21_ma13/unit?unit=6&lesson=7**

Course Outcomes		
Upon successful completion of this course, the student will be able to:		
CO No.	**CO Statement**	**Cognitive Level (K-Level)**
CO1	Remember the system of linear equations and linear inequalities	**K_1**
CO2	Demonstrate and study of operations research and illustrate the examples of mathematical formulation	**K_2**
CO3	Classification and study of Transportation problems and Assignment problems.	**K_4**
CO4	Examine and Illustrate the Replacement Problems with suitable examples.	**K_4**
CO5	Assess forward and backward calculations of network problems to obtain CPM and PERT	**K_5**

Relationship Matrix:

Course Outcomes (COs)	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of COs
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PSO1**	**PSO2**	**PSO3**	**PSO4**	**PSO5**	
CO1	3	3	2	3	1	3	3	3	3	3	2.7
CO2	3	3	3	3	1	3	3	3	3	3	2.8
CO3	3	3	3	3	2	2	3	2	3	3	2.7
CO4	3	3	3	2	1	3	3	3	3	3	2.7
CO5	3	3	3	3	2	2	3	3	3	3	2.8
Mean Overall Score											2.74
Correlation											**High**

Mean Overall Score = Sum of Mean Score of Cos / Total Number of Cos

Mean Overall Score	**Correlation**
< 2	Low
≥ 2 and < 2	Medium
≥ 2	High

Course Coordinator: Dr. T. Shiek Pareeth

Semester	Course Code	Course Category	Hours/ Week	Credits	Marks for Evaluation		
					CIA	ESE	Total
II	23UCA2AC4	ALLIED – IV	3	2	25	75	100

Course Title	Game Theory and its Applications

SYLLABUS		
Unit	**Contents**	**Hours**
I	Introduction - What is game theory? Nash Equilibrium: Theory - Strategic games - Example: The Prisoner's Dilemma - Bach or Stravinsky? - Matching Pennies - The Stag Hunt - Nash equilibrium - Examples of Nash equilibrium - best response functions - Dominated actions - Cournot's model of Oligoploy - Bertrand's model of Oligopoly	9
II	Extensive Games with Perfect Information: Theory - Strategies and Outcomes - Nash equilibrium - Subgame perfect equilibrium - Finding subgame perfect equilibria of finite horizon games: backward induction - Ticktacktoe, Chess and related games – The ultimatum game and the holdup game - Stackelberg's model of duopoly	9
III	Extensive Games with Perfect Information: Extensions and Discussion - Allowing for Simultaneous moves - Illustration: Entry into a monopolized industry - Electoral competition with strategic voters - Committee decision-making - Exit from a declining industry	9
IV	Coalitional Games and the Core: Coalitional games - Illustration: Ownership and the distribution of wealth - Exchanging homogeneous horses. Bayesian Games - Introduction - General definitions - Illustration: Cournot's duopoly game with imperfect information - Providing a public good - Auctions - Juries.	9
V	Repeated games: The Prisoner's Dilemma - The main idea - Infinitely repeated games - Some Nash equilibria of the infinitely repeated Prisoner's Dilemma - Subgame perfect equilibria and the one-deviation property - Repeated games: General Results - Nash equilibria of general infinitely repeated games - Subgame perfect equilibria of general infinitely repeated games.	9
VI	**Current Trends (For CIA only)** – Nash equilibrium, The Prisoner's dilemma & The Tragedy of the Commons	

Text Book(s):

Martin J. Osborne, "An Introduction to Game Theory", Oxford University Press, 2003
UNIT I : Chapter 1 (Section 1.1), Chapter 2 (Section 2.1 - 2.9), Chapter 3 (Section 3.1, 3.2)
UNIT II : Chapter 5 (Section 5.1 - 5.6), Chapter 6 (Section 6.2, 6.3)
UNIT III : Chapter 7 (Section 7.1 - 7.5)
UNIT IV : Chapter 8 (Section 8.1 - 8.4), Chapter 9 (Section 9.1, 9.3, 9.5 - 9.8)
UNIT V : Chapter 14 (Section 14.1, 14.3, 14.5, 14.7), Chapter 15 (Section 15.1, 15.2)

Reference Book(s):

1. Prajit K. Dutta, "Strategies and Games: Theory and Practice", MIT Press.
2. Allan MacKenzie, "Game Theory for Wireless Engineers", Synthesis lectures on Communications, 2006

Web Resource(s):

1. https://online.stanford.edu/courses/soe-ycs0002-game-theory

Course Outcomes		
Upon successful completion of this course, the student will be able to:		
CO No.	**CO Statement**	**Cognitive Level (K-Level)**
CO1	Remember the fundamental concept of game theory	**K1**
CO2	Demonstrate and study base concept of Nash equilibrium	**K2**
CO3	The ability to apply solution concepts to examples of games, and to state and explain them precisely	**K2**
CO4	The ability to solve unseen games that are variants of known examples.	**K3**
CO5	Create real time games using game theory concepts	**K5**

Relationship Matrix:

Course Outcomes (COs)	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of COs
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
CO1	3	3	2	3	1	3	3	3	3	3	2.7
CO2	3	1	1	3	1	3	3	3	2	3	2.3
CO3	3	3	3	3	2	2	3	2	3	3	2.7
CO4	1	2	3	2	1	3	3	2	3	3	2.3
CO5	3	3	3	3	2	2	1	3	3	2	2.5
Mean Overall Score											2.5
Correlation											**High**

Mean Overall Score = Sum of Mean Score of Cos / Total Number of Cos

Mean Overall Score	Correlation
< 2	Low
≥ 2 and < 2	Medium
≥ 2	High

Course Coordinator: Lt. J. Hajiram Beevi

Semester	Course Code	Course Category	Hours/ Week	Credits	Marks for Evaluation		
					CIA	ESE	Total
II	23UCN2SS	Soft Skills Development	2	2	-	100	100
Course Title	Soft Skills Development						

SYLLABUS		
Unit	**Contents**	**Hours**
I	**Communication Skills:** Verbal and Non - Verbal communication - The active vocabulary - Conversational Etiquette - KOPPACT syndrome	6
II	**Emotional Skills:** Emotional Intelligence - The five steps to Emotional Quotient - Self Awareness and Regulation - Empathy - Social Intelligence - stress management - coping with failures	6
III	**Functional Skills:** Using the tools of communicatory and emotional skills - Resume writing - Preparation of Curriculum Vitae - interview skills - Acing the interview - Group dynamics - Mock interviews and Group discussions	6
IV	**Interpersonal Skills:** Synergising relationships - SWOT analysis - SOAR analysis - The social skills - Time Management - Decision making - problem solving - prioritising and Implementation	6
V	**Personality Skills:** Leadership skills - Attributes and Attitudes - Social leader Vs The Boss - critical and creative thinking	6

Hours of Teaching : 5 hours and Hours of Activity: 25 hours

Textbook(s):

1. Social intelligence: The new science of human relationships - Daniel Goleman; 2006.
2. Body Language in the workplace - Allan and Barbara Pease; 2011.
3. Student's Hand Book: Skill Genie - Higher education department, Government of Andhra Pradesh.

Web References:

1. https://nptel.ac.in/courses/109105110

EVALUATION CRITERIA

Work Book (Each unit carries 10 marks) - 50 Marks
Examination - 50 Marks

1. Teacher who handles the subject will award 50 marks for work book based on the performance of the student.
2. On the day of examination the examiners (Internal & External) will jointly award the marks for the following categories:

    - Self-Introduction - 20 Marks
    - Resume - 10 Marks
    - Mock Interview - 20 Marks

To assess the self-introduction, Examiners are advised to watch the video presentation submitted by the students. If they failed to submit the video presentation, the Examiners may direct the student to introduce himself orally and a maximum 10 marks only will be awarded.

Mock Interview Marks Distribution (**20-Marks**)

Attitude (self interest, confidence etc.) (4 Marks)	Physical appearance including dress code (4 Marks)	Communication Skills (6 Marks)	Answering questions asked from the resume and work book (6 Marks)

Course Coordinator:
Dr. M. Syed Ali Padusha

Semester	Course Code	Course Category	Hours/ Week	Credits	Marks for Evaluation		
					CIA	ESE	Total
III	23UCA3CC5	Core – V	4	4	25	75	100

Course Title	Data Structures

SYLLABUS

Unit	Contents	Hours
I	INTRODUCTION TO DATA STRUCTURES: Overview – Definitions – ARRAYS: Overview – Introduction – Range of an Array – One- dimensional Array - Two-dimensional Array - Multidimensional Arrays. LINKED LISTS - Overview – Introduction – Memory Allocation – Benefits – Limitations – Types – Basic Operations – Singly Linked Lists – Circular Linked Lists - Doubly Linked Lists	12
II	STACKS, QUEUES AND RECURSION: Introduction – Stacks – Array Representations of Stacks - Linked Representations of Stacks – Arithmetic Expressions; Polish Notation – Recursion: Towers of Hanoi – Queues - Representation of Queues - Linked representation of Queues – Deques - Priority Queues	12
III	TREES: Introduction – Binary Trees– Representing Binary Tress in Memory – Traversing Binary Trees - Traversal Algorithms using Stacks – * Header Nodes * - Binary Search Trees – Searching and Inserting in Binary Search Trees – Deleting in a Binary Search Tree – Heap; Heap Sort	12
IV	GRAPHS AND THEIR APPLICATIONS: Sequential Representation of Graphs – Warshall's Algorithm – Linked Representation of a Graph – Operations on Graphs – Traversing a Graph – Posets; Topological Sorting	12
V	SORTING AND SEARCHING: Introduction – Insertion Sort – Selection Sort – Quick Sort - Merging – Merge Sort – Radix Sort – Searching and Data Modification – Hashing	12

…….. Self Study

Text Book(s):

1. A. Chitra and P.T. Rajan, Data Structures, Tata McGraw – Hill Publishing Company Limited, New Delhi
2. Seymour Lipschutz, *Data Structures*, Tata McGraw – Hill Publishing Company Limited, New Delhi, 2006

Reference Book(s):

1. Jean Paul Tremblay and Paul G. Sorenson, An Introduction to Data Structures with Applications, Tata McGraw-Hill, Second Edition

Web Resource(s):

1. https://www.geeksforgeeks.org/data-structures/
2. https://www.javatpoint.com/data-structure-tutorial

Course Outcomes		
Upon successful completion of this course, the student will be able to:		
CO No.	**CO Statement**	**Cognitive Level (K-Level)**
CO1	Acquire knowledge in the representation of arrays and linked lists	**K1**
CO2	Implement the application of arrays and linked lists in various structures	**K2, K3**
CO3	Evaluate the use of stack, queue, trees and graphs	**K3**
CO4	Describe the concept of graphs and their application	**K4**
CO5	Apply the appropriate structures in problem solving	**K5**

Relationship Matrix:

Course Outcomes (COs)	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of COs
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PSO1**	**PSO2**	**PSO3**	**PSO4**	**PSO5**	
CO1	**2**	**2**	**3**	**3**	**3**	**2**	**3**	**2**	**3**	**2**	**2.5**
CO2	**2**	**3**	**2**	**2**	**2**	**3**	**2**	**2**	**2**	**2**	**2.2**
CO3	**3**	**2**	**3**	**3**	**3**	**2**	**3**	**2**	**3**	**3**	**2.7**
CO4	**2**	**3**	**2**	**3**	**3**	**3**	**3**	**3**	**3**	**3**	**2.8**
CO5	**2**	**3**	**3**	**3**	**2**	**3**	**3**	**3**	**2**	**2**	**2.6**
Mean Overall Score											**2.56**
Correlation											**High**

Mean Overall Score	Correlation
< 1.5	Low
≥ 1.5 and < 2.5	Medium
≥ 2.5	High

Course Coordinator: Dr. O. S. Abdul Qadir

Semester	Course Code	Course Category	Hours/ Week	Credits	Marks for Evaluation		
					CIA	ESE	Total
III	23UCA3CC6P	Core – VI	3	3	20	80	100

Course Title	DATA STRUCTURES LAB - PRACTICAL

SYLLABUS

Contents

1. Singly Linked List Operations
2. Stack Operations using Arrays.
3. Queue Operations using Arrays
4. Bubble Sort.
5. Selection Sort.
6. Insertion Sort
7. Quick Sort.
8. Searching (Linear Search, Binary Search)
9. Multidimensional Arrays (Matrix Operations, Addition and Multiplication)
10. Fibonacci Series using Recursion

Course Coordinator: Dr. O. S. Abdul Qadir

Semester	Course Code	Course Category	Hours/ Week	Credits	Marks for Evaluation		
					CIA	ESE	Total
III	23UCA3AC5	Allied - V	4	4	25	75	100

Course Title	Principles of Accountancy

SYLLABUS		
Unit	**Contents**	**Hours**
I	Meaning of Accounting – Meaning and Objects of Book Keeping – Accounting Concepts and Conventions – Principles of Double Entry – Kinds of Account – Journal and Ledger accounts	**12**
II	Subsidiary Books – Purchase Book, Sales Book, Purchase Returns Book, Bills Receivable Book, Bills Payable Book, Cash Book, Analytical Petty Cash Book and Journal Proper –*Bank Reconciliation Statement*	**12**
III	Trail Balance – Preparation – Errors Disclosed and Errors Not Disclosed by its Suspense account – Rectification of Errors	**12**
IV	Preparation of Final Accounts – Trading Account, Profit and Loss Account, Balance Sheet – Adjusting and Closing Entries. Methods of Depreciation Fixed Percentage on Original Cost Method and Diminishing Balance Method Only	**12**
V	Bills of Exchange – Bill Transaction, Discounting Endorsement – Sending Bill for Collection, Noting of a Bill, Renewal of a Bill – Insolvency of Acceptor	**12**
VI	Current Trends (For CIA only) – Contemporary developments related to the course During the semester concerned.	

….. Self Study

Text Book(s):

1.N. Vinayakam, P.L. Mani, K.L. Nagarajan, Principles of Accountancy, EURASIA Publishing House PVT Ltd., New Delhi, Revised Edition, 2002

UNIT I : Chapter 1 & 2 UNIT II : Chapters 3 & 7 UNIT III : Chapter 4
UNIT IV : Chapter 6 UNIT V : Chapter 8

Reference Book(s):

M.C. Shukla, T.S. Grewal, Advanced Accounts, Eleventh Edition, S. Chand& Company Pvt. Ltd,Reprinted, 1988

1.Jean Paul Tremblay and Paul G. Sorenson, An Introduction to Data Structures with Applications, Tata McGraw-Hill,Second Edition

Web Resource(s):

1. https://www.accountingcoach.com/accounting-principles/explanation

Course Outcomes		
Upon successful completion of this course, the student will be able to:		
CO No.	**CO Statement**	**Cognitive Level (K-Level)**
CO1	State/outline the nature of financial accounting	**K1**
CO2	Recognize the basics of financial accounting	**K2**
CO3	Analyze assigned questions, exercises and problems	**K3**
CO4	Participate in class, to complete written homework assignments and to interact with other classmates	**K3**
CO5	Participate in collaborative learning, problems and cases in financial accounting selected to foster cooperative learning	**K5**

Relationship Matrix:

Course Outcomes (COs)	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of COs
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
CO1	**2**	2	**1**	**3**	**3**	**1**	**2**	**3**	**2**	**1**	**2.0**
CO2	**3**	**3**	**3**	**1**	**2**	**2**	**2**	**2**	**3**	**3**	**2.4**
CO3	**2**	**2**	**1**	**2**	**3**	**2**	**1**	**2**	**3**	**2**	**2.2**
CO4	**2**	**2**	**3**	**1**	**2**	**3**	**1**	**2**	**3**	**3**	**2.2**
CO5	**2**	**3**	**2**	**3**	**2**	**3**	**2**	**1**	**2**	**1**	**2.6**
Mean Overall Score											**2.28**
Correlation											**Medium**

Mean Overall Score	Correlation
< 1.5	Low
≥ 1.5 and < 2.5	Medium
≥ 2.5	High

Course Coordinator Dr. S. Mohamed Ashik

Semester	Course Code	Course Category	Hours/ Week	Credits	Marks for Evaluation		
					CIA	ESE	Total
III	23UCA3AC6P	Allied – VI	3	2	20	80	100

Course Title	ACCOUNTING PACKAGE LAB - PRACTICAL

SYLLABUS

Contents

Solve the following problems using Tally ERP software

1. Architecture and customization of Tally
2. Configuration of Tally
3. Tally Screens and Menus
4. Creation of new company and groups
5. Preparation of voucher entries
    a. Payment voucher
    b. Receipt voucher
    c. Sales voucher
    d. Purchase voucher
    e. Contra voucher
    f. Journal voucher
6. Ledger Creation
7. Preparation of Trail balance
8. Preparation of Profit and Loss statement.
9. Preparation of Balance Sheet
10. Preparation of Bank Reconciliation Statement
11. Creation of Inventory reports
    a. Stock groups
    b. Stock items
    c. Unit measurement
    d. Single and multiple Godown

Course Coordinator Dr. S. Mohamed Ashik

Semester	Course Code	Course Category	Hours/ Week	Credits	Marks for Evaluation		
					CIA	ESE	Total
III	23UCA3GE1	GENERIC ELECTIVE - I	2	2	-	100	100

Course Title	Office Automation

SYLLABUS		
Unit	**Contents**	**Hours**
I	INTRODUCTION: Introduction to Computers-What is computer-History of Computers: Evolution – The first computer-Next Generations- Basic Anatomy of Computers: The Basic Components – Functioning of the Components-Introduction to MS-Office	6
II	MS-WORD: Word Basics-Starting Word - Creating document- Formatting Features –Menus.	6
III	MS-WORD: Toolbars and their Icons - Mail Merge – Macro - Creating and formatting tables	6
IV	MS-EXCEL: Excel Basics-Introduction-Menus-*Entering Formula*-Data Sort and Filter- Functions	6
V	MS-POWERPOINT: Navigating in PowerPoint-Working with PowerPoint-Formatting Features-Inserting picture-Inserting design templates- Inserting transitions and animations-Saving PowerPoint in different formats	6

….. Self Study

Text Book(s):

1. Sanjay Saxena, MS Office 2000 for Everyone, Vikas Publishing, 2001

Reference Book(s):

1. Archana Kumar, Computer Basics with Office Automation, First Edition, 2010

Web Resource(s):

1. http://www.bcpls.org/Docs/Computer_Handouts/Word101.pdf
2. http://www.itdesk.info/Microsoft%20Excel%202010%20notes.pdf

Course Outcomes

Upon successful completion of this course, the student will be able to:

CO No.	CO Statement	Cognitive Level (K-Level)
CO1	Understand the basic knowledge of computer and components of computer in education.	K1
CO2	Perform common functional operations in Windows and apply the menus in MS-Word.	K2
CO3	Understand the menus and Toolbars in MS-Excel.	K2
CO4	Understand the components of MS-PowerPoint.	K2
CO5	Understand the Database Create and usage of MS-Access.	K3

Relationship Matrix:

Course Outcomes (COs)	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of COs
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
CO1	2	2	3	1	2	2	3	1	2	1	1.9
CO2	3	2	3	1	3	1	2	3	3	2	2.3
CO3	1	2	3	2	2	2	2	3	2	1	2.0
CO4	2	3	1	2	2	2	2	2	1	2	1.9
CO5	3	2	2	2	2	2	1	2	2	2	1.9
Mean Overall Score											2.02
Correlation											Medium

Mean Overall Score	Correlation
< 1.5	Low
≥ 1.5 and < 2.5	Medium
≥ 2.5	High

Course Coordinator: Mrs. S. Munavara Banu

Semester	Course Code	Course Category	Hours / Week	Credits	Marks for Evaluation		
					CIA	ESE	Total
III	23UCN3AE2	AECC - II	2	2	-	100	100
Course Title	**Environmental Studies**						

Unit	Contents	Hours
I	The multidisciplinary nature of environmental studies Definition, scope, importance, awareness and its consequences on the planet.	6
II	**Ecosystems:** Definition, structure and function of ecosystem; Energy flow in an ecosystem: food chain, food web and ecological succession. Case studies of the following ecosystems: a) Forest ecosystem b) Grassland ecosystem c) Desert ecosystem d) Aquatic ecosystems (ponds, streams, lakes, rivers, oceans, estuaries)	6
III	**Natural Resources:** Renewable and Non-renewable Resources: Land Resources and land use change; Land degradation, soil erosion and desertification. Deforestation: Causes and impacts due to mining, dam building on environment, forests, biodiversity and tribal populations. Water: Use and over-exploitation of surface and ground water, floods, droughts, conflicts over water (international & inter-state). Heating of earth and circulation of air; air mass formation and precipitation. Energy resources: Renewable and non-renewable energy sources, use of alternate energy sources, growing energy needs, case studies. renewable energy resources significance of wind, solar, hydal, tidal, waves, ocean thermal energy and geothermal energy.	6
IV	**Biodiversity and Conservation:** Levels of biological diversity: genetic, species and ecosystem diversity; Biogeography zones of India; Biodiversity patterns biodiversity hot spots. mega-biodiversity nation; Endangered and endemic species of India. Threats to biodiversity: habitat loss, poaching of wildlife, man-wildlife conflicts, biological invasions; Conservation of biodiversity: *In situ* and *Ex situ* conservation of biodiversity. Ecosystem and biodiversity services: Ecological, economic, social, ethical, aesthetic and Informational value.	6
V	**Environmental Pollution & Conservation:** Environmental pollution: types, causes, effects and controls; Air, water, soil, chemical and noise pollution Waste to wealth - Energy from waste, value added products from waste, fly ash utilization and disposal of garbage, solid waste management in urban and rural areas, Swachh Bharat Abhiyan, recent advances in solid waste management, modern techniques in rain water harvesting and utilization.	6

Text books:

1. Asthana DK and Meera A, Environmental studies, 2nd Edition, Chand and Company Pvt Ltd, New Delhi, India, 2012.
2. Arumugam N and Kumaresan V, Environmental studies, 4th Edition, Saras Publication, Nagercoil, Tamil Nadu, India, 2014.

Activity – I:

1. Assignments – Titles on Environmental awareness to be identified by teachers from the following (scripts not less than 20 pages)
2. Elocution – (Speech on "Environment beauty is the fundamental duty" of citizen of the country for 3 to 5 minutes)
3. Environment issues – TV, Newspaper, Radio and Medias messages – Discussion ϖ Case Studies/Field Visit/Highlighting Day today environmental issues seen or heard
4. Debating/Report Submission – Regarding environment issues in the study period Activity II
5. Environmental awareness through charts, displays, models and video documentation.

Celebrating Nationally Important Environmental Days

National Science Day – 28th February
World wild life Day – 3rd March
International forest Day – 21st March
World Water Day – 22nd March
World Meteorological Day – 23rd March
World Health Day – 7th April
World Heritage Day – 18th April
Earth / Planet Day – 22nd April
Plants Day – 26th May
Environment Day – 5th June Activity III Discipline specific activities

EVALUATION COMPONENT:

Component I: (25 Marks) Document (or) Poster presentation or Elocution
Component II: (25 Marks) Album making (or) case study on a topic (or) field visit
Component III: (25 Marks) Essay writing (or) Assignment submission
Component IV: (25 Marks) Quiz (or) multiple choice question test

Course Outcomes

Course Outcomes: Upon successful completion of this course, the student will be able to:

CO No.	CO Statement	Cognitive Level (K-level)
CO1	To understand the multi-disciplinary nature of environmental studies and its importance	K1
CO2	To obtain knowledge on different types of ecosystem	K2
CO3	To acquire knowledge on Renewable and non-renewable resources, energy conservation	K3
CO4	To understand biodiversity conservation	K4
CO5	To analysis impact of pollution and conversion waste to products	K5

Relationship Matrix:

Course Outcomes (COs)	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of COs
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PSO1**	**PSO2**	**PSO3**	**PSO4**	**PSO5**	
CO1	02	02	02	02	02	03	03	03	03	03	2.5
CO2	02	03	03	02	03	03	03	03	03	03	2.8
CO3	02	03	03	03	03	03	03	03	03	03	2.9
CO4	02	02	03	03	03	03	03	03	03	03	2.8
CO5	02	03	03	03	03	03	03	02	03	03	2.8
										Mean Overall Score	2.7
										Correlation	High

Mean Overall Score	Correlation
< 1.5	Low
≥ 1.5 and < 2.5	Medium
≥ 2.5	High

Course Coordinator: Dr. B. Balaguru

Semester	Course Code	Course Category	Hours/ Week	Credits	Marks for Evaluation		
					CIA	ESE	Total
IV	23UCA4CC7	Core – VII	6	6	25	75	100

Course Title	Database Management Systems

SYLLABUS		
Unit	**Contents**	**Hours**
I	**Database Concepts:** Database and DBMS, Comparison between traditional file V/s DBMS, Characteristics of data in database, Components of database system environment, Functions of DBMS, Advantages and disadvantages of the DBMS, DBMS users, Database administrator, Role of DBA. Database Design and Architecture, Essentials of Database Design, Three level Architecture of Database - External, Conceptual and Internal. **Data Models concept:** Relational, Operators, relations, domains and attributes, keys.	**18**
II	**Normalization:** Purpose of Normalization – How Normalization Support Database Design – Data Redundancy and Update Anomalies – Functional Dependencies – First Normal Form – Second Normal Form – Third Normal Form – Advanced Normalization – *BCNF*.	**18**
III	**Relational Algebra:** Algebraic Operation – Select – Project – Set Operations – Cartesian product - Rename – Join – Division. SQL – Advantages – Types of SQL Commands – Creating table – Modify Table – Views – INSERT, UPDATE, and DELETE Operations – Queries – Aggregate Functions with Grouping and Having Clause – Sub Queries.	**18**
IV	Introduction to PL/SQL – Variables – Data Types – Control Structure – Cursors – Iterative Control Statement – PL/SQL Exception – Triggers – Types of Triggers – Procedures and Packages	**18**
V	**Client/Server Technology and Client Server Database:** Introduction – Benefits of C/S Computing – Cost of C/S computing – Applications Architecture. **Database Security:** Database Security Risks – Dimension of Database Security – Data Security Requirements – Database Users – Protecting the Data within the Database – Roles – Granting and Revoking Privileges – System Availability Factors – Network Security.	**18**

……. Self Study

Text Book(s):
Alexis Leon and Mathews Leon, Database Management Systems, Vikas Publishing House Pvt. Ltd., New Delhi.
UNIT I : Chapters 5, 7, 8 & 9 UNIT III: Chapters 12, 14, 15 & 16 UNIT IV: Chapter 21, Glossary of Database Terms: D UNIT V : Chapters 32 & 2
2. Thomas M. Connolly, Carolyn E. Begg, Database Systems A Practical Approach to Design, Implementation and Management, Pearson Education, Fifth impression 2012.
UNIT II: Chapter 13 (Sections 13.1 – 13.4 & 13.6 – 13.9) & Chapter 14 (14.2)
Web Resource(s)
https://www.tutorialspoint.com/
https://www.javatpoint.com/dbms

Course Outcomes		
Upon successful completion of this course the student will able to :		
CO No.	**CO Statement**	**Cognitive Level (K – Level)**
CO1	Understand the basic concepts and various data model and query language used in the database design	K1, K2
CO2	Understand the Normalization techniques.	K2
CO3	Master the basics of SQL and construct queries using SQL	K3
CO4	Apply PL/SQL for processing database	K4
CO5	Design and build the principles of Client – server computing and mandatory access control	K5

Relationship Matrix:

Course Outcomes (CO's	Programme Outcomes(PO's)					Programme Specific Outcomes(PO's)					Mean Score of CO'S
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PSO1**	**PSO2**	**PSO3**	**PSO4**	**PSO5**	
CO1	3	3	2	3	1	3	3	3	3	1	2.5
CO2	3	3	2	3	2	3	3	3	2	1	2.4
CO3	3	3	3	2	1	3	2	2	3	2	2.5
CO4	2	3	3	3	2	3	3	3	2	2	2.5
CO5	3	3	3	3	2	3	3	3	3	2	2.7
3Mean Overall Score											**2.54**
Correlation											**High**

Mean Overall score=Sum of Mean Score of Cos / Total Number of Cos

Mean Overall Score	Correlation
< 1.5	Low
≥ 1.5 and < 2.5	Medium
≥ 2.5	High

Course Coordinator: Dr. R. Inbaraj

Semester	Course Code	Course Category	Hours/ Week	Credits	Marks for Evaluation		
					CIA	ESE	Total
III	23UCA4CC8P	Core – VIII	3	3	20	80	100

Course Title	RDBMS Lap - Practical

1. SQL: DATA DEFINITION LANGUAGE

a) Table Creation: Primary Key.

b) Table Alteration: Rename table and Column name, Add Column, Drop column, Modify Column size and Data type.

c) Drop Table

d) Truncate Table

2. SQL: DATA MANIPULATION LANGUAGE

a) Select b) Insertion c) Update c) Deletion d) String Operations e) Set Operations

f) Tuple Variables g) Aggregate Functions with Grouping and Having Clause

h) Ordering Tuples i) Join Operations – Inner-Join, Outer- join, Right outer join, Left Outer Join.

j) Nested Sub-queries – Set Membership (IN, NOTIN), Set Comparison (SOME, ALL Sub-queries in the From Clause)

3. SQL: DATA CONTROL LANGUAGE

a) Grant b) Revoke

4. SQL: TRANSACTION CONTROL LANGUAGE

a) Commit b) Rollback c) Savepoint

5. PL/SQL PROCEDURE

a) Reverse the String

b) Find Factorial number using Recursive Function

c) Prepare Student Mark Sheet

d) Employee Pay Roll

e) EB – Bill

Course Coordinator: Dr. R. INBARAJ

Semester	Course Code	Course Category	Hours/ Week	Credits	Marks for Evaluation		
					CIA	ESE	Total
IV	23UCA4AC7	Allied - VII	4	4	25	75	100

Course Title	SCRIPTING LANGUAGES

SYLLABUS		
Unit	**Contents**	**Hours**
I	HTML: Introduction – SGML – Outline of HTML Document – Head Section – Body Section – HTML Forms	**12**
II	DHTML: Introduction – Cascading Style Sheets – DHTML Document Object Model and Collections – Event Handling – Filters and Transitions – Data Binding	**12**
III	Introduction to JavaScript: Beginning with JavaScript. Placing JavaScript in an HTML: Using the HTML Script tags – Creating your first script – Using External JavaScript files – Using functions – *JavaScript operators*.	**12**
IV	Conditional Statements and Loops - Event Handlers – The Document Objects – Window Object – Math, Number and Data objects	**12**
V	Typescript: Overview – environment setup – basic syntax – types – variables – operators – decision making – loops – functions – strings – *classes*.	**12**
VI	**Current Trends (For CIA only) –** Contemporary developments related to the course during the semester concerned.	

….. Self Study

Text Book(s):

1. N.P. Gopalan, J. Akilandeswari, Web Technology, PHI Learning Private Limited, New Delhi, Fifth Printing, 2011
2. John Pollock, "JavaScript", TATA McGRAW - Hill, Third Edition, 2010
3. Tutorial.pdf, Tutorials Point (I) Pvt. Ltd., 2016

Reference Book(s):

1. Douglas Crockford, Java Script: The Good parts, O'Reilly Media, 2008

Web Resource(s):

1. https://riptutorial.com/Download/typescript.pdf
2. https://pdfcoffee.com/qdownload/typescript-tutorial-pdf-free.html

Course Outcomes

Upon successful completion of this course, the student will be able to:

CO No.	CO Statement	Cognitive Level (K-Level)
CO1	Understand the basic concepts of HTML, CSS, and JavaScript	**K2**
CO2	Analyze a web page and identify its elements and attributes	**K2**
CO3	Demonstrate the important HTML tags for designing static pages and separate design from content using Cascading Style Sheet	**K3**
CO4	Implement interactive web pages using html and JavaScript	**K4**
CO5	Develop web application software tools and identify the environments currently available on the market to design web sites	**K5**

Relationship Matrix:

Course Outcomes (COs)	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of COs
	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5	
CO1	2	2	3	2	3	2	2	2	3	3	2.4
CO2	3	2	3	3	2	3	2	3	3	2	2.6
CO3	1	2	3	3	3	2	2	2	3	3	2.4
CO4	3	2	3	3	3	1	2	2	2	2	2.3
CO5	3	3	2	2	3	2	2	3	3	1	2.4
Mean Overall Score											2.51
Correlation											High

Mean Overall Score	Correlation
< 1.5	Low
≥ 1.5 and < 2.5	Medium
≥ 2.5	High

Course Coordinator Mr. M. KAMAL

Semester	Course Code	Course Category	Hours/ Week	Credits	Marks for Evaluation		
					CIA	ESE	Total
IV	23UCA4AC8P	Allied - VIII	3	2	20	80	100

Course Title	Scripting Languages Lab - Practical

1. Develop a HTML document to basic alignments on headers and format the document using suitable tags.
2. Develop a HTML document which displays the arts and science department of your college and the courses offered by the department using list.
3. Develop a HTML document to create table with rows and columns and split them using rows span and column span.
4. Using CSS and HTML, make a webpage that has two columns. Each column should use half of the width of the page. The left half should have a light-gray background and the right half should have a light green background. The left half should have a list of the 5 best-selling books in Amazon's kindle store, and the right should have a list of your five favourite celebrities or athletes.
5. Develop a program to illustrate CSS border style properties
6. Develop a JavaScript program to compute the sum of an array of integers.
7. Develop a JavaScript program to generate ten random numbers within 1 to 100 and display the numbers in a table.
8. Develop a JavaScript to create an Arithmetic Calculator using user defined Function
9. Develop a JavaScript for loop that will iterate from 0 to 100. For each iteration, it will check if the current number is odd or even, and display a message to the screen.
10. Develop a JavaScript program to sum of sum digits of a given number.
11. Develop a JavaScript function to demonstrate the mathematical functions.
12. Develop a JavaScript program to demonstrate the various string functions.
13. Develop a Typescript program to demonstrate the control statements
14. Develop a Typescript program to demonstrate the string functions

Course Coordinator **Mr. M. KAMAL**

Semester	Course Code	Course Category	Hours/ Week	Credits	Marks for Evaluation		
					CIA	ESE	Total
IV	23UCA4GE2	Generic Elective – II	2	2	-	100	100

Course Title	Image Editing Tools

SYLLABUS		
Unit	**Contents**	**Hours**
I	Photoshop Panels and Tools: Workspaces-The Tool Bar-The Options Bar-The Menu Bar. Basic Operations: Opening Files-Open As-Open As Smart Object-Saving Your Work-Popular and Useful File Formats-Creating a New Document.	**6**
II	Navigating and Zooming: The Navigator Panel-The Hand Tool-The Zoom Tool-Useful Keyboard Shortcuts. Simple Global Adjustments: Levels-Hue Saturation. Layers : Layers-Aligning and Moving Layers-Layer Interactions-Blend Modes-Naming Layers-Text Layers-Shape Layers.	**6**
III	Simple Selections: The Magic Wand Tool-The Marquee Tools-Marquee Selection Modifier Keys-The Lasso Tools-Copying a Selected Item to a New Layer. Choosing Colours : The Foreground and Background colours-Changing the Colours-The Swatches Panel-*The Color Panel*.	**6**
IV	Video and animation: - Creating frame animations- Creating timeline animations- Creating images for video- Saving and exporting video and animations- Editing video and animation layers	**6**
V	Filter and effects: Filter basics- Filter effects reference- Add Lighting Effects. Saving and exporting: Saving images- File formats	**6**
VI	**Current Trends (For CIA only) –** Contemporary developments related to the course during the semester concerned.	

….. Self Study

Text Book(s):

1. An Introduction to Adobe Photoshop- Steve Bark & Ventus

   UNIT I : Chapters 1 & 2 UNIT II : Chapters 3,4 & 5 UNIT III : Chapters 6 & 7
2. ADOBE® PHOTOSHOP Help and tutorials by Adobe - February 2013

   UNIT IV : Chapter 13 UNIT V : Chapters 14 & 15

Reference Book(s):

1. Barbara Obermeier, Ted Padova, Photoshop Elements 2020 for Dummies, Published by John Wiley & Sons, Inc., New Jersey, 2020

Web Resource(s):

https://help.adobe.com/archive/en/photoshop/cs6/photoshop reference.pdf

Course Outcomes		
Upon successful completion of this course, the student will be able to:		
CO No.	**CO Statement**	**Cognitive Level (K-Level)**
CO1	Acquire the knowledge on photo editing.	**K2**
CO2	Acquire the knowledge on photo editing.	**K2**
CO3	Learn the practical experience in editing video and animation	**K3**
CO4	Understand image cropping Operations	**K2**
CO5	Get idea on applying Filter and light effect	**K2**

Relationship Matrix:

Course Outcomes (COs)	Programme Outcomes (POs)					Programme Specific Outcomes (PSOs)					Mean Score of COs
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PSO1**	**PSO2**	**PSO3**	**PSO4**	**PSO5**	
CO1	**2**	2	**3**	**2**	**3**	**2**	**2**	**2**	**3**	**3**	2.4
CO2	**3**	**2**	**3**	**3**	**2**	**3**	**2**	**3**	**3**	**2**	2.6
CO3	**1**	**2**	**3**	**3**	**3**	**2**	**2**	**2**	**3**	**3**	2.4
CO4	**3**	**2**	**3**	**3**	**3**	**1**	**2**	**2**	**2**	**2**	2.3
CO5	**3**	**3**	**2**	**2**	**3**	**2**	**2**	**3**	**3**	**1**	2.4
Mean Overall Score											**2.02**
Correlation											**Medium**

Mean Overall Score	Correlation
< 1.5	Low
≥ 1.5 and < 2.5	Medium
≥ 2.5	High

Course Coordinator: Mrs. S. Tamil Fathima