FACULTY OF SCIENCE AND HUMANITIES

ACADEMIC CURRICULA

UNDERGRADUATE DEGREE PROGRAMME

Bachelor of Computer Applications(Honors)
In
Data Science

Four Years

National Education Policy

Learning Outcome-based Curricula Framework

National Credit Framework

Academic Year

2024 - 2025

SRM INSTITUTE OF SCIENCE AND TECHNOLOGY

(Deemed to be University u/s 3 of UGC Act, 1956)

Kattankulathur, Chengalpattu District 603203, Tamil Nadu, India

1. Department Vision Statement	
Stmt-1	Imparting quality education in Computer Applications and prepare young minds to serve community
Stmt-2	Contributing effectively to produce globally competent quality professionals in the field of Computer Applications
Stmt- 3	Prioritizing adaptability and industry alignment for a unique learning experience

2. Department Mission Statement	
Stmt - 1	Impart student's essential knowledge and skills required for a successful career in Computer Applications
Stmt - 2	Cultivate and foster a conducive environment for scholarly research
Stmt - 3	Inculcate in the students a sense of commitment to professional ethics, moral values with emphasis on teamwork and leadership qualities
Stmt - 4	Instill the students with a clear awareness of environmental issues and their relevance to their profession
Stmt - 5	Impress upon the students the impact of their work on the nation's economic and social progress

"Stmt" stands for Statement

3. Programme Education Objectives (PEO)	
PEO - 1	To develop skills and domain knowledge to solve real world problems in diverse applications
PEO - 2	To facilitate professional skills and competencies for successful career in the field of Computer Applications
PEO - 3	To possess the knowledge for pursuing advanced studies and entrepreneurial opportunities in the field of Computer Applications
PEO - 4	To kindle the minds of students to take up research and development in Computer Applications with missionary zeal
PEO - 5	To prepare the students as balanced individuals who are keen to leave a mark by excelling in their profession

4. Consistency of PEO's with Mission of the Department					
	Mission Stmt. - 1	Mission Stmt. – 2	Mission Stmt. - 3	Mission Stmt. – 4	Mission Stmt. – 5
PEO - 1	High	High	High	High	Medium
PEO - 2	High	High	Medium	High	High
PEO - 3	High	Medium	Medium	Medium	Low
PEO - 4	Medium	Low	High	Low	Medium
PEO - 5	Low	High	Low	Medium	High

** H – High Correlation, M – Medium Correlation, L – Low Correlation
** H, M, and L have numerical equivalents of 3, 2, 1 correspondingly

5. Programme Learning Outcomes (PLO)	
	Graduate Learning Attributes
PLO - 1	Problem Solving, Critical Thinking, Creativity
PLO - 2	Communication Skills, Collaborating Skills
PLO - 3	Independent Thinking, Analytical Reasoning, Learning to Learn ,Research Skills
PLO - 4	Leadership Qualities, Professionalism, Autonomy, Accountability
PLO - 5	Digital Technology Skills
PLO - 6	Value Inculcation, Multicultural inclusivity
PLO - 7	Environmental Action, Community Engagement
PLO - 8	Entrepreneurial Risk Taking
PSO - 1	Encompassing both theoretical knowledge and real-world applications to solve problems, to evaluate information and to develop software tools
PSO - 2	Practical, analytical, proficient programming skills, and innovative solutions in various domains of Data Science

PSO-Programme Specific Outcome

6. Mapping of PLOs with PEOs

	PLO - 1	PLO - 2	PLO - 3	PLO - 4	PLO - 5	PLO – 6	PLO - 7	PLO – 8	PSO - 1	PSO – 2
PEO - 1	3	3	3	2	3	1	1	3	3	3
PEO - 2	3	3	3	3	3	2	3	2	3	3
PEO - 3	2	2	2	1	2	2	2	3	3	3
PEO - 4	3	2	3	2	3	3	3	2	3	3
PEO - 5	2	3	2	3	2	3	2	2	2	3

7. Programme Structure

Discipline Core Courses (C)					
Course Code	Course Title	Session / Week			C
		L	T	P	
UDS24101J	Programming using Java	3	0	3	4
UDS24102J	Fundamentals of Data Science	3	0	3	4
UMS24103T	Mathematics for Artificial Intelligence	4	0	0	4
UDS24201J	Elements of Distributed Data Processing	3	0	3	4
UDS24202J	Data Structures and Algorithms	3	0	3	4
UMS24203T	Statistics for Artificial Intelligence	4	0	0	4
UDS24301J	Data Engineering for Enterprises	3	0	3	4
UDS24302J	Database Management System	3	0	3	4
UDS24303J	Natural Language Processing	3	0	3	4
UDS24401J	Deep Learning	3	0	3	4
Total Learning Credits					40

Discipline Core/Elective Courses (D)					
Course Code	Course Title	Session / Week			C
		L	T	P	
UDS24D01J	Advanced Computing with Python	3	0	2	4
UDS24D02J	Machine Learning				
UDS24D03J	Deep Learning with Keras and Tensorflow	3	0	3	4
UDS24D04J	Big Data Analytics with Applications				
UDS24D05J	Intelligent Automation	3	0	3	4
UDS24D06J	Computer Vision				
UDS24D07J	Advanced Analytics and Data Visualization	3	0	3	4
UDS24D08J	Data Science for Business Analytics				
UDS24D09J	Artificial Intelligence and Automation for Enterprises	3	0	3	4
UDS24D10J	Data Wrangling				
UDS24D11T	Research Methodology in Data Science	4	0	0	4
UDS24D12T	Data Analytics for Project Management				
UDS24D13J	Data Warehousing and Data Mining	3	0	3	4
UDS24D14J	Cloud and Grid Computing				
UDS24D15J	Machine Learning for Enterprises	3	0	3	4
UDS24D16J	Real World Computer Vision Applications				
UDS24D17J	Technology Leadership and Innovation Management	3	0	2	4
UDS24D18J	Social Media and Text Analytics				
UDS24D19T	Statistical Analysis and Business Applications	4	0	0	4
UDS24D20T	Applications of Edge IoT and Machine Learning				
Total Learning Credits					40

Elective Courses (Minor) (E)					
Course Code	Course Title	L	T	P	C
UDS24E01J	Data Science and Analytics	3	0	3	4
UDS24E02J	Data Analytics using Spreadsheet	3	0	3	4
UDS24E03J	Essentials of Machine Learning	3	0	3	4
UDS24E04J	Programming using R	3	0	3	4
UDS24E05J	Programming using Python	3	0	3	4
UDS24E06J	Introduction to Deep Learning	3	0	3	4
UDS24E07J	Applications of Computer Vision	3	0	3	4
UDS24E08J	Data Visualization Tools	3	0	3	4
Total Learning Credits					**32**

Multidisciplinary Courses (M)					
Course Code	Course Title	L	T	P	C
UDS24M01J	Internet of Things	2	0	2	3
UDS24M02J	Digital Transformation	2	0	2	3
UDS24M03J	Blockchain Technology	2	0	3	3
Total Learning Credits					**9**

Value Added Courses (V)					
Course Code	Course Title	L	T	P	C
UCD24V01T	Essentials of Artificial Intelligence	1	0	0	1
UES24V01T	Environmental Studies	2	0	0	2
UCD24V02T	Universal Human Values	2	0	0	2
Total Learning Credits					**5**

Ability Enhancement Courses (A)					
Course Code	Course Title	L	T	P	C
ULT24AE1J	Tamil – I				
ULH24AE1J	Hindi - I	2	0	2	3
ULF24AE1J	French - I				
ULT24AE2J	Tamil – II				
ULH24AE2J	Hindi - II	2	0	2	3
ULF24AE2J	French - II				
ULE24AE2J	Business English	2	0	2	3
Total Learning Credits					**9**

Skill Enhancement Courses (S)					
Course Code	Course Title	L	T	P	C
UCD24S01J	Verbal Ability and Skill Development	1	0	2	2
UCD24S02L	Quantitative Aptitude and Logical Reasoning	0	0	2	1
UCD24S03J	Industry Oriented Employability and Leadership Skills	1	0	2	2
UEN24S01L	Communication Skills	0	0	4	2
UCD24S04J	Career Readiness and Professional Skills	1	0	2	2
Total Learning Credits					**9**

Project Work / Internship (P)					
Course Code	Course Title	Session / Week			C
		L	T	P	
UDS24P01L	Internship – I	0	0	0	1
UDS24P02L	Internship – II	0	0	0	1
UDS24P03L	Project Work	0	0	4	2
UDS24P04L	Research Project and Dissertation	0	0	24	12
UDS24P05L	Professional Internship				
Total Learning Credits					16

Mandatory Courses (Y)					
Course Code	Course Title	Session/ Week			C
		L	T	P	
UNS24Y01L	NSS	0	0	0	0
UNC24Y01L	NCC				
UNO24Y01L	NSO				
UYG24Y01L	YOGA				
UMI24Y01L	My India Project	0	0	0	0
Total Learning Credits					0

Internship - I to be completed during summer vacation of the first year
Internship - II to be completed during summer vacation of the second year

Students from other departments can enroll in Elective Courses (Minor) (E)
Students from all departments will be able to enroll in Multidisciplinary Courses (M).

8. Course Allocation across Semesters

	Semester – I				
Course Code	**Course Title**	**Sessions Per Week**			**C**
		L	**T**	**P**	
ULT24AE1J	Tamil – I	2	0	2	3
ULH24AE1J	Hindi – I				
ULF24AE1J	French – I				
ULE24AE2J	Business English	2	0	2	3
UDS24101J	Programming using Java	3	0	3	4
UDS24102J	Fundamentals of Data Science	3	0	3	4
UMS24103T	Mathematics for Artificial Intelligence	4	0	0	4
UCD24S01J	Verbal Ability and Skill Development	1	0	2	2
Total Learning Credits					**20**

	Semester – II				
Course Code	**Course Title**	**Sessions Per Week**			**C**
		L	**T**	**P**	
ULT24AE2J	Tamil – II	2	0	2	3
ULH24AE2J	Hindi – II				
ULF24AE2J	French – II				
UDS24201J	Elements of Distributed Data Processing	3	0	3	4
UDS24202J	Data Structures and Algorithms	3	0	3	4
UMS24203T	Statistics for Artificial Intelligence	4	0	0	4
UCD24V01T	Essentials of Artificial Intelligence	1	0	0	1
	Multidisciplinary Course – I				3
UCD24S02L	Quantitative Aptitude and Logical Reasoning	0	0	2	1
UNS24Y01L	NSS	0	0	0	0
UNC24Y01L	NCC				
UNO24Y01L	NSO				
UYG24Y01L	YOGA				
Total Learning Credits					**20**

Total Learning Credits of Courses of FIRST year = 40

Semester – III					
Course Code	**Course Title**	**Sessions Per Week**			**C**
		L	**T**	**P**	
UDS24301J	Data Engineering for Enterprises	3	0	3	4
UDS24302J	Database Management System	3	0	3	4
UDS24303J	Natural Language Processing	3	0	3	4
	Minor Elective – I				4
UDS24P01L	Internship - I	0	0	0	1
	Multidisciplinary Course – II				3
Total Learning Credits					**20**

Semester – IV					
Course Code	**Course Title**	**Sessions Per Week**			**C**
		L	**T**	**P**	
UDS24401J	Deep Learning	3	0	3	4
UDS24D01J	Advanced Computing with Python	3	0	2	4
UDS24D02J	Machine Learning				
	Minor Elective – II				4
	Minor Elective – III				4
UEN24S01L	Communication Skills	0	0	4	2
UCD24S03J	Industry Oriented Employability and Leadership Skills	1	0	2	2
UMI24Y01L	My India Project	0	0	0	0
Total Learning Credits					**20**

Total Learning Credits of Courses of SECOND year = 40

Semester – V					
Course Code	**Course Title**	**Sessions Per Week**			**C**
		L	**T**	**P**	
UDS24D03J	Deep Learning with Keras and Tensorflow	3	0	3	4
UDS24D04J	Big Data Analytics with Applications				
UDS24D05J	Intelligent Automation	3	0	3	4
UDS24D06J	Computer Vision				
UCS24E04J	Minor Elective – IV				4
	Multidisciplinary Course – III				3
UES24V01T	Environmental Studies	2	0	0	2
UCD24S04J	Career Readiness and Professional Skills	1	0	2	2
UDS24P02L	Internship - II	0	0	0	1
Total Learning Credits					**20**

Semester – VI					
Course Code	**Course Title**	**Sessions Per Week**			**C**
		L	**T**	**P**	
UDS24D07J	Advanced Analytics and Data Visualization	3	0	3	4
UDS24D08J	Data Science for Business Analytics				
UDS24D09J	Artificial Intelligence and Automation for Enterprises	3	0	3	4
UDS24D10J	Data Wrangling				
	Minor Elective – V				4
	Minor Elective – VI				4
UDS24P03L	Project Work	0	0	4	2
UCD24V02T	Universal Human Values	2	0	0	2
Total Learning Credits					**20**

Total Learning Credits of Courses of THIRD year = 40

Semester – VII					
Course Code	**Course Title**	**Sessions Per Week**			**C**
		L	**T**	**P**	
UDS24D11T	Research Methodology in Data Science	4	0	0	4
UDS24D12T	Data Analytics for Project Management				
UDS24D13J	Data Warehousing and Data Mining	3	0	3	4
UDS24D14J	Cloud and Grid Computing				
UDS24D15J	Machine Learning for Enterprises	3	0	3	4
UDS24D16J	Real World Computer Vision Applications				
	Minor Elective – VII				4
	Minor Elective – VIII				4
Total Learning Credits					**20**

Semester – VIII					
Course Code	**Course Title**	**Sessions Per Week**			**C**
		L	**T**	**P**	
UDS24D17J	Technology Leadership and Innovation Management	3	0	2	4
UDS24D18J	Social Media and Text Analytics				
UDS24D19T	Statistical Analysis and Business Applications	4	0	0	4
UDS24D20T	Applications of Edge IoT and Machine Learning				
UDS24P04L	Research Project and Dissertation	0	0	24	12
UDS24P05L	Professional Internship				
Total Learning Credits					**20**

Total Learning Credits of Courses of FOURTH year = 40

8.1 Elective Courses (MINOR) offered by the Department of Computer Applications to other Departments (excluding Department of Computer Applications)

Elective Courses (Minor) (E)						
Semester	**Course Code**	**Course Title**	**Sessions Per Week**			
			L	**T**	**P**	**C**
III	UDS24E01J	Data Science and Analytics	3	0	3	4
IV	UDS24E02J	Data Analytics using Spreadsheet	3	0	3	4
IV	UDS24E03J	Essentials of Machine Learning	3	0	3	4
V	UDS24E04J	Programming using R	3	0	3	4
VI	UDS24E05J	Programming using Python	3	0	3	4
VI	UDS24E06J	Introduction to Deep Learning	3	0	3	4
VII	UDS24E07J	Applications of Computer Vision	3	0	3	4
VII	UDS24E08J	Data Visualization Tools	3	0	3	4
Total Learning Credits						**32**

8.2 Multidisciplinary Courses offered by the Department of Computer Applications to all Departments (including Department of Computer Applications)

Multidisciplinary Courses (M)						
Semester	**Course Code**	**Course Title**	**Sessions Per Week**			
			L	**T**	**P**	**C**
II	UDS24M01J	Internet of Things	2	0	2	3
III	UDS24M02J	Digital Transformation	2	0	2	3
V	UDS24M03J	Blockchain Technology	2	0	3	3
Total Learning Credits						**9**

9. Programme Articulation Matrix											
Course Code	Course Name	Programme Learning Outcomes (PLO)									
		1	2	3	4	5	6	7	8	PSO1	PSO2
ULT24AE1J	Tamil – I	2	1	1	1	-	1	1	1	-	-
ULH24AE1J	Hindi – I	2	2	1	2	2	1	1	-	-	-
ULF24AE1J	French – I	2	2	1	2	2	1	1	-	-	-
ULE24AE2J	Business English	1	3	3	3	2	1	-	2	1	1
UDS24101J	Programming using Java	3	1	2	2	3	-	-	2	3	3
UDS24102J	Fundamentals of Data Science	3	1	2	3	3	-	-	2	3	3
UMS24103T	Mathematics for Artificial Intelligence	1	1	-	-	1	-	-	-	-	-
UCD24S01J	Verbal Ability and Skill Development	3	2	2	2	1	1	2	1	-	-
ULT24AE2J	Tamil – II	2	1	2	1	-	1	1	1	-	-
ULH24AE2J	Hindi – II	2	2	1	2	2	1	1	-	-	-
ULF24AE2J	French – II	2	2	1	2	2	1	1	-	-	-
UDS24201J	Elements of Distributed Data Processing	3	2	2	2	3	-	-	2	2	3
UDS24202J	Data Structures and Algorithms	3	2	3	3	2	-	-	2	3	2
UMS24203T	Statistics for Artificial Intelligence	1	1	-	-	1	-	-	-	-	-
UCD24V01T	Essentials of Artificial Intelligence	3	2	1	1	1	1	-	2	2	2
	Multidisciplinary Course – I										
UCD24S02L	Quantitative Aptitude and Logical Reasoning	2	1	3	-	2	2	-	-	-	-
UNS24Y01L	NSS										
UNC24Y01L	NCC										
UNO24Y01L	NSO										
UYG24Y01L	YOGA										
UDS24301J	Data Engineering for Enterprises										
UDS24302J	Database Management System										
UDS24303J	Natural Language Processing										
	Minor Elective – I										
UDS24P01L	Internship - I										
	Multidisciplinary Course – II										
UDS24401J	Deep Learning										
UDS24D01J	Advanced Computing with Python										
UDS24D02J	Machine Learning										
	Minor Elective – II										

Code	Course												
	Minor Elective – III												
UEN24S01L	Communication Skills												
UCD24S03J	Industry Oriented Employability and Leadership Skills												
UMI24Y01L	My India Project												
UDS24D03J	Deep Learning with Keras and Tensorflow												
UDS24D04J	Big Data Analytics with Applications												
UDS24D05J	Intelligent Automation												
UDS24D06J	Computer Vision												
UCS24E04J	Minor Elective – IV												
	Multidisciplinary Course – III												
UES24V01T	Environmental Studies												
UCD24S04J	Career Readiness and Professional Skills												
UDS24P02L	Internship - II												
UDS24D07J	Advanced Analytics and Data Visualization												
UDS24D08J	Data Science for Business Analytics												
UDS24D09J	Artificial Intelligence and Automation for Enterprises												
UDS24D10J	Data Wrangling												
	Minor Elective – V												
	Minor Elective – VI												
UDS24P03L	Project Work												
UCD24V02T	Universal Human Values												
UDS24D11T	Research Methodology in Data Science												
UDS24D12T	Data Analytics for Project Management												
UDS24D13J	Data Warehousing and Data Mining												
UDS24D14J	Cloud and Grid Computing												
UDS24D15J	Machine Learning for Enterprises												
UDS24D16J	Real World Computer Vision Applications												
	Minor Elective – VII												
	Minor Elective – VIII												
UDS24D17J	Technology Leadership and Innovation Management												
UDS24D18J	Social Media and Text Analytics												
UDS24D19T	Statistical Analysis and Business Applications												
UDS24D20T	Applications of Edge IoT and Machine Learning												
UDS24P04L	Research Project and Dissertation												
UDS24P05L	Professional Internship												

Abbreviations

CLR – Course Learning Rationale
CLO – Course Learning Outcomes
PLO – Programme Learning Outcomes
SLO – Session Learning Outcomes
BLoT – Bloom's Level of Thinking
CLA – Continuous Learning Assessment

SEMESTER - I

Course Code	ULT24AE1J	Course Title		Tamil - I	Category	A	Ability Enhancement Course	L	T	P	C
								2	0	2	3

Course Offering Department	Tamil	Pre-requisite Courses	Nil	Co-requisite Courses	Nil	Progressive Courses	Nil	Data Book / Codes/Standards	Nil

CLR	The purpose of learning this course is to:		Depth				Attainment			Programme Learning Outcomes									
			1	2	3	4	1	2	3	1	2	3	4	5	6	7	8	9	10
CLR-1	மரபிலிருந்து மாற்றம் பெற்ற புதுக்கவிதை மரபின் சிந்தனைகளை அறியச்செய்தல்																		
CLR-2	நவீன கவிதையின் வழி மனித வாழ்வியல் விழுமியங்களைத் தெரியச் செய்தல்																		
CLR-3	சிற்றிலக்கியங்கள், காப்பியங்கள்கற்பிக்கும் தமிழ்ச் சமூகத்தின் வாழ்வியலை அறியச் செய்தல்																		
CLR-4	நவீன தமிழ் இலக்கிய வளர்ச்சி வரலாற்றைப் புரியச் செய்தல்																		
CLR-5	மொழிப்பயிற்சி வழி மொழியின் பல்வேறு நுட்பங்களைத் தெரியச்செய்தல்																		

CLO	At the end of this course, learners will be able to:	Conceive	Design	Implement	Operate	Bloom's Level of Thinking	Expected Proficiency (%)	Expected Attainment (%)	Problem Solving, Critical Thinking, Creativity Solving	Communication Skills, Collaborating Skills	Independent Thinking, Analytical Reasoning, Learning to Learn, Research Skills	Leadership Qualities, Professionalism, Autonomy, Accountability	Digital Technology Skills	Value Inculcation, Multicultural inclusivity	Environmental Action, Community Engagement	Entrepreneurial Risk Taking	PSO-1	PSO-2
CLO-1	புதுக்கவிதை உருவாக்கித்தந்த புதிய சிந்தனைக்களங்களை அறிந்து கொள்ளுதல்	✓	✓	-	-	2	75	60	3	-	3	-	-	-	-	3	-	-
CLO-2	நவீன கவிதைகள் வழி மாற்றம் பெற்று வரும் மானுடவிழுமியங்களைத் தெரிந்துகொள்ளுதல்	✓	✓	✓	-	2	80	70	-	-	2	-	3	3	-	-	-
CLO-3	தமிழ்ச்சமூகத்தின்இடைக்காலவாழ்வியல்முறைகளைஉணர்ந்துகொள்ளுதல்	✓	✓	✓	✓	2	70	65	3	-	3	-	-	2	-	-	-
CLO-4	நவீனஇலக்கியவரலாறுவழிதமிழ்க்கல்விவரலாறு, சமூகவரலாறுபெற்றவளர்ச்சிநிலைகளைத்தெரிந்துகொள்ளுதல்	✓	✓	✓	✓	2	70	70	-	3	-	-	1	2	-	-	-
CLO-5	மொழியின்நுட்பங்களைத்தெரிந்துமொழிஆளுமையோடுசெயல்படும் திறன்பெறுதல்	✓	✓	✓	✓	3	80	70	3	3	-	2	-	-	-	-	-

Sessions	CLO - 1 12	CLO - 2 12	CLO - 3 12	CLO – 4 12	CLO – 5 12
SLO-1	தமிழ்க்கவிதைமரபு	நவீனகவிதைதோற்றம், வரலாறு	தமிழரின்வீரமரபு - போர்விழுமியங்கள்	சிற்றிலக்கியத்தோற்றம் – வகைமை	தமிழ்உரைநடைமரபு – உ·வே·சா· வின்பங்களிப்பு
SLO-2	புதுக்கவிதைஉருவாக்கம்,புதுக்கவிதைவளர்ச்சிநெறிகள்	நவீனகவிதைகளில்செல்நெறிகள்	பரணிஅறிமுகம்பரணிஇலக்கியங்கள்	பிள்ளைத்தமிழ் - உலா - தூது	உ·வே· சா· வின்ராஜவைத்தியம்
SLO-3	பாரதியார்பன்முகஆளுமைத்திறன்	கவிதைமொழி - நவீனகவிஆளுமைகள்	தலைவனின்வீரம் - கலிங்கத்துப்பரணி 477, 490	புதுக்கவிதையின்தோற்றமும் மொழியும்	நாட்டுப்புறமரபில்சிறுதெய்வவழிபாடு
SLO-4	பாரதேசம்பாரதேசத்தின்வளம்	கவிதையில்நாட்டுப்புறவடிவம்	தமிழ்இலக்கியமரபில்துதுஇலக்கியங்கள்	புதுக்கவிதையில்சமூகம் - புதுக்கவிதையும்இதழ்களும்	கழனியூரனின்பொன்காத்தஜையனார்
SLO-5	வெள்ளிப்பனிமலையின்மீதுலவுவோம்…	பெண்களின்கல்விநிலை -இளம்பிறை – அம்மா	தமிழின்பெருமை – தமிழ்விடுதூது (184 – 186)	மணிக்கொடிஇதழ்,எழுத்துஇதழ்,வானம்பாடிஇதழ்	பிழைநீக்கிஎழுதும்நுட்பங்கள்
SLO-6	20 ஆம்நூற்றாண்டுக்கவிதைமரபில்பாரதிதாசன்	ஆண்பெண்சமத்துவமும்ப·கல்பனா – கீறல்விழுந்தமாலைக்காலங்கள்	செய்யுள்மரபில்கலம்பக இலக்கியங்கள்	சிறுகதைதோற்றம்–சிறுகதைவளர்ச்சி	எழுத்துப்பிழை – ந - ண - னல,ஈ,எ,ழ, ர, றவேறுபாடுஅறிதல்
SLO-7	பாரதிதாசன் - அழகின்சிரிப்பு ஆல் - ஆயிரம்கிளைகள்கொண்டஅடிமரம்	விளிம்புநிலைவாழ்வியல்: திருநர்களும்சாதனைகளும்	கையறுநிலை – நந்திக்கலம்பகம் - வானுறுமதியை (110)	சிறுகதைவரலாறு - சிறுகதைஆசிரியர்கள்	தொடர்பிழைஒருமைபன்மைவேறுபாடு
SLO-8	ஆல் - ஆயிரம்கிளைகள்கொண்டஅடிமரம்	திருநங்கைகுணவதி - சமூகப்பார்வை	தமிழ்இலக்கியமரபில் குறவஞ்சிஇலக்கியங்கள்	இதழ்களும்சிறுகதையும்	பிறமொழிச்சொற்களைநீக்கிஎழுதுதல், ஷ,ஜ,ஸ,ஹமாற்றொலிகள்
SLO-9	வானம்பாடிக்கவிஞர்களும்மு·மேத்தாவும்	புலம்பெயர்வாழ்வியல் - வலியும்நம்பிக்கையும்	குற்றாலக்குறவஞ்சி – ஆடுமரவீணைமணி (3)	புதினம்தோற்றம் - புதினம்வளர்ச்சிவரலாறு	தமிழில்சொல்வகைகள்சொல்லும்பயன்பாடும்
SLO-10	மனிதநேயம் - மு·மேத்தாவின்மனிதனைத்தேடி	சர்மிளாஸெய்யித் – புராதனஊர்	காப்பியஇலக்கணம் - காப்பியவகைமைகள்	புதினத்தின்வகைமைபுதினஆசிரியர்கள்	பெயர்ச்சொற்கள்பெயர்ச்சொற்களும்வகைகளும்
SLO -11	தமிழ்க்கவிதையில்சுற்றுச்சூழலியல்	காலந்தோறும்கவிதைவடிவில்மாற்றங்கள்·ஹைக்கூ – மு·முருகேஷ்	சிலப்பதிகாரம் – அறிமுகம் கட்டுரைக்காதை	தமிழ்இலக்கியத்தில்உரைநடை⊂க்கூறுகள் - உரைநடையின்தோற்றம்	வினைச்சொற்கள்அறிதல்

| SLO -12 | இயற்கையும்சமத்துவமும் பழனிபாரதியின்காடு | லிமரைக்கூ – ஈரோடுதமிழன்பன்சென்ரியூ – மாமதயானை | ஊழ்வினை– கோவலனின்முற்பிறப்பு வரலாறு | தமிழில்உரைநடைவளர்த்தஅறிஞர்கள் | தமிழில்பெயரடை, வினையடைஅறிதல் |

Resources

1	முல்லைக்காடு, தொகுப்பும்பதிப்பும் - தமிழ்த்துறைஆசிரியர்கள், எஸ்·ஆர்·எம்·அறிவியல்மற்றும்தொழில்நுட்பக்கல்விநிறுவனம், காட்டாங்குளத்தூர், 603203, 2023	4	வல்லிக்கண்ணன், புதுக்கவிதைதோற்றமும்வளர்ச்சியும், ஆழிபதிப்பகம், சென்னை, 2018
2	கா· சிவத்தம்பி, தமிழில்சிறுகதைதோற்றமும்வளர்ச்சியும், என்·சி·பி·எச்·, சென்னை, 2013	5	மு·வரதராசன், தமிழ்இலக்கியவரலாறு, சாகித்தியஅக்காதெமி, 1972.
3	மதுரைதமிழ்இலக்கியமின்தொகுப்புத்திட்டம்	6	தமிழ்இணையக்கல்விக்கழகம்

Assessment											Strategies					
Bloom's Level of Thinking	**Continuous Learning Assessment (CLA) (50% weightage)**								**Final Assessment**		**Technology**		**Pedagogy / Andragogy**		**Sustainable Development**	
	CLA – 1		**CLA – 2**		**CLA – 3**		**CLA – 4 ***		**(50 % weightage)**							
	(10 %)		**(10 %)**		**(20 %)**		**(10%)**				Simulations		Clarification/Pauses	✓	Good Health & Well Being	✓
	Theory (%)	**Practice (%)**	**Theory (%)**	**Practice (%)**	**Theory (%)**	**Practice (%)**	**Theory (%)**	**Practice (%)**	**Theory (%)**		Presentation Tools	✓	Group Discussion	✓	Quality Education	✓
											Learning Management System	✓	Hands-on Practice	✓	Gender Equality	✓
1 Remember	15	15	15	15	10	10	10	10	15				Debate	✓		
2 Understand	15	15	15	15	10	10	10	10	15				Interactive Lecture	✓		
3 Apply	20	25	25	20	25	25	25	25	25				Brainstorming	✓		
4 Analyze	20	25	25	20	25	25	25	25	25							
5 Evaluate	15	10	10	15	15	15	15	15	10							
6 Create	15	10	10	15	15	15	15	15	10							
Total (%)	100	100	100	100	100	100	100	100	100							

* The evaluation can be done on one or more parameters that include, (i) Seminars, (ii) Mini-Project, (iii) Case-Studies, (iv) MOOC Certification, (v) Publication of Article, (vi) Presentation of Research Work in Conferences, (vii) Assignments

Course Designers					
Professional Experts		**Higher Institution Experts**		**Internal Experts**	
1	Dr. P.R.Subramanian, Director, Mozhi Trust, Thiruvanmiyur, Chennai – 600 041.	1	Dr. V. Dhanalakshmi, Associate Professor, Subramania Bharathi School of Tamil Language & Literaturel, Pondicherry University, Pondicherry	1	Dr. B.Jaiganesh, Associate Professor & Head, Dept. of Tamil, FSH, SRMIST, KTR.
				2	Dr. R. Ravi, Assistant Professor and Head, Dept. of Tamil, FSH, SRMIST, VDP.
				3	Mr. G. Ganesh, Assistant Professor, Dept. of Tamil, FSH, SRMIST, RMP.
				4	Dr. T.R.Hebzibah beulah Suganthi,Assistant Professor, Dept. of Tamil, FSH, SRMIST, KTR.
				5	Dr. S.Saraswathy, Assistant Professor,Dept. of Tamil, FSH, SRMIST, KTR.

| Course Code | ULH24AE1J | Course Title | Hindi - I | | | | Category | A | Ability Enhancement Course | L 2 | T 0 | P 2 | C 3 |

| Course Offering Department | Hindi | Pre-requisite Courses | Nil | Co-requisite Courses | Nil | Progressive Courses | Nil | Data Book / Codes/Standards | Nil |

CLR	The purpose of learning this course is to:		Depth				Attainment			Programme Learning Outcomes										
CLR-1	To Communicate in Hindi without any inhibition		1	2	3	4	1	2	3	1	2	3	4	5	6	7	8	9	10
CLR-2	To appreciate the Hindi Language in its various forms																		
CLR-3	To analyze the different writing styles																		
CLR-4	To display moral and social values in the field of social Responsibility and Integrity																		
CLR-5	To be willing listeners and Translators-where need be																		

CLO	At the end of this course, learners will be able to:	Conceive	Design	Implement	Operate	Bloom's Level of Thinking	Expected Proficiency (%)	Expected Attainment (%)	Problem Solving, Critical Thinking, Creativity Solving	Communication Skills, Collaborating Skills	Independent Thinking, Analytical Reasoning, Learning to Learn ,Research Skills	Leadership Qualities, Professionalism, Autonomy, Accountability	Digital Technology Skills	Value Inculcation, Multicultural inclusivity	Environmental Action, Community Engagement	Entrepreneurial Risk Taking	PSO-1	PSO-2
CLO-1	To Understand the Philosophy of life and living through Stories	✓	✓	-	-	2	85	75	3	2	3	-	-	2	-	-	-	-
CLO-2	To Examine Travelogue writing and Sketch	✓	✓	✓	-	2	85	75	3	-	2	-	3	-	3	-	-	-
CLO-3	To Identify Irony and essay based writing	✓	✓	✓	✓	3	85	75	-	3	-	3	3	2	-	-	-	-
CLO-4	Evaluate the various social issues depicted in the prose	✓	✓	✓	✓	3	85	75	2	-	2	3	-	-	2	-	-	-
CLO-5	To Understand the basic and fundamental principal of Translation	✓	✓	✓	✓	3	85	75	-	3	-	3	3	2	-	-	-	-

Sessions	CLO - 1 12	CLO - 2 12	CLO – 3 12	CLO - 4 12	CLO – 5 12
SLO-1	KAHANI KI AVDHARNA	REKHACHITRA & YATRAVITRANT	NIBANDH	NATAK	ANUVAD& PARIBHASHIK SHABDAVALI
SLO-2	SWARUP AUR PARIBHASHA	AVDHARNA EVM SWAROOP	NIBANDH KI AVDHARNA EVM SAWROOP	AVDHARNA EVM SAWROOP	ARTH EVM PARIBHASHA
SLO-3	KAHANI KE TATVA EVM MAHATWA	MAHATVA AUR UDDESHYA	MAHATVA EVM UDDESHYA	TATWA EVM PRAKAR	SWARUP EVM PRAKAR

SLO-4	PARIKSHA- PREMCHAND	GESHA REKHACHITRA	KUTAJ- NIBANDHHAJARI PRASHAD DIVEDI	UDDESHYA	MAHATVA
SLO-5	VISLESHAN	PATH KA VISHLESHAN	LEKHIAK PARICHAY	NATAK KA MAHATVA	UDDESHYA
SLO-6	UDDESHYA	GURU SHISHYA KA SAMBANDH	SHANGHARSHIL JEEVAN	RANGMANCH KA PARICHAY	ANUVAD KA PRAYOJAN EVM PRAYOG
SLO-7	MALBE KA MALIK- MOHAN RAKESH	THELE PAR HIMALAY(YATRAVITRANT)	PATH KA MAHATVA	LEKHAK PARICHAY	SHROT EVM LAKSHYA BHASHA KA GYAN
SLO-8	LEKHAK PARICHAY	YATRAVITRANT KA MAHATVA	BHOLARAM KA JEEV-(VYANGYA) HARISHANKAR PARSHAI	NATAK KA VISLESHAN	ANUVAD KA DAYITVA
SLO-9	BATWARE KA YATHARTH VARNAN	YATRA KA YATHARTH CHITRAN	VYANGYA KI AVADHARNA	LALCH KA DUSHPARINAM	PARIBHASHIK SHABDAVALI
SLO-10	TATKALIN PARISHTHITI KA VARNAN	PATH KA VISLESHAN	PATH KA VIHLESHAN	GURU SHISHYA SAMBANDH	TAKANIKI SHABDAVALI KA MHATVA
SLO-11	KAHANI KA VISHLESHAN	HIMALAY KA LOK JEEVAN	SARKARI TANTRA KA KHOKHLA RUP	MAHATTAKANKSHI KA DUSHPARINAM	VIVIDH PRAYOG
SLO-12	KAHANI KA UDDESHYA	HIMALAY KA VARNANA	SANVEDANSHIL BHAVANA	TATKALIN SAMAJIK VYAVASTHA KI CHARCHA	SHABDAVALI KI AVSHYAKTA

Resources			
1	EDITED BOOK: "SAMANYA HINDI", SRIJONLOK PUBLICATION, 2023, New Delhi.	4	BHAKTI ANDOLAN AUR SURDAS KA KAVYA – MANAGER PANDEY
2	KABIR – HAZARI PRASAD DWEDI	5	BIHARI – VISHVNATH PRASAD MISHR
3	SURDAS – RAM CHANDRA SHUKL	6	AADHUNIK VIGYAPAN AUR JANSAMPARK – TARESH BHATIA

FACULTY OF SCIENCE AND HUMANITIES
SRM INSTITUTE OF SCIENCE AND TECHNOLOGY

Assessment

Bloom's Level of Thinking		Continuous Learning Assessment (CLA) (50% weightage)								Final Assessment (50 % weightage)
		CLA – 1		CLA – 2		CLA – 3		CLA – 4 *		
		(10 %)		(10 %)		(20 %)		(10%)		
		Theory (%)	Practice (%)	Theory (%)	Practice (%)	Theory (%)	Practice (%)	Theory (%)	Practice (%)	Theory (%)
1	Remember	15	15	15	15	10	10	10	10	15
2	Understand	15	15	15	15	10	10	10	10	15
3	Apply	20	25	25	20	25	25	25	25	25
4	Analyze	20	25	25	20	25	25	25	25	25
5	Evaluate	15	10	10	15	15	15	15	15	10
6	Create	15	10	10	15	15	15	15	15	10
	Total (%)	100	100	100	100	100	100	100	100	100

Strategies

Technology		Pedagogy / Andragogy		Sustainable Development	
Simulations		Clarification/Pauses	✓	Good Health & Well Being	✓
Presentation Tools	✓	Group Discussion	✓	Quality Education	✓
Learning Management System	✓	Hands-on Practice	✓	Gender Equality	✓
		Debate	✓		
		Interactive Lecture	✓		
		Brainstorming	✓		

* The evaluation can be done on one or more parameters that include, (i) Seminars, (ii) Mini-Project, (iii) Case-Studies, (iv) MOOC Certification, (v) Publication of Article, (vi) Presentation of Research Work in Conferences, (vii) Assignments

Designers

Professional Experts		Higher Institution Experts		Internal Experts	
1	MS.Reetha Govindan,Senior Manager (Rajbhasha) ritushivani@yahoo.com	1	Dr. S.Padmapriya, Prof& Head, Pondicherry University, kalapet, puducherry-605014 padmapriya.srirka@gmail.com	1	Dr.S Preeti. Associate Professor & Head, SRMIST-hod.hindi.ktr@srmist.edu.in
2	Aditya Singh, student Member, B.Com IAF, Dept. of Comerce,SRM IST,KTR aa5404@gmail.com			2	Dr. Md.Shwahidul Islam Assistant Professor, SRMIST. shwahidj@srmist.edu.in
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4	ALUMINI - VIPIN KUMAR JHA, Senior Translation Officer anju.bipin.jha@gmail.com			4	Dr.Nisha Murlidharan Assistant Professor, VDP,SRM IST Murulidharan- nishamup@srmist.edu.in

Course Code	ULF24AE1J	Course Title	French - I		Category	A	Ability Enhancement Course	L	T	P	C
								2	0	2	3

Course Offering Department	French	Pre-requisite Courses	Nil	Co-requisite Courses	Nil	Progressive Courses	Nil	Data Book / Codes/Standards	Nil

CLR	The purpose of learning this course is to:	Depth				Attainment			Programme Learning Outcomes										
CLR-1	Extend and expand their savoir-faire through the acquisition of current scenario	1	2	3	4	1	2	3	1	2	3	4	5	6	7	8	9	10
CLR-2	Enable the students to overcome the fear of speaking a foreign language and take position as a foreigner speaking French																	
CLR-3	Make them learn the basic rules of French Grammar.																	
CLR-4	Develop strategies of comprehension of texts of different origin																	
CLR-5	Strengthen the language of the students both in oral and written																	

CLO	At the end of this course, learners will be able to:	Conceive	Design	Implement	Operate	Bloom's Level of Thinking	Expected Proficiency (%)	Expected Attainment (%)	Problem Solving, Critical Thinking, Creativity Solving	Communication Skills, Collaborating Skills	Independent Thinking, Analytical Reasoning, Learning to Learn ,Research Skills	Leadership Qualities, Professionalism, Autonomy, Accountability	Digital Technology Skills	Value Inculcation, Multicultural inclusivity	Environmental Action, Community Engagement	Entrepreneurial Risk Taking	PSO-1	PSO-2
CLO-1	To acquire knowledge about French language	✓	✓	-	-	2	85	75	3	2	3	-	-	2	-	-	-	-
CLO-2	To strengthen the knowledge on concept, culture, civilization, and translation of French	✓	✓	✓	-	2	85	75	3		2	-	3	-	3	-	-	-
CLO-3	To develop content using the features in French language	✓	✓	✓	✓	3	85	75	-	3	-	3	3	2	-	-	-	-
CLO-4	To interpret the French language into other language	✓	✓	✓	✓	3	85	75	2		2	3	-	-	2	-	-	-
CLO-5	To improve the communication, intercultural elements in French language	✓	✓	✓	✓	3	85	75	-	3	-	3	3	2	-	-	-	-

Sessions	CLO - 1	CLO - 2	CLO - 3	CLO - 4	CLO - 5
	12	12	12	12	12
SLO-1	Contacts, Emma la championne	Les verbes du premier groupe	Qu'est-ce qu'ils font?	Portraits	Les verbes du deuxième groupe –
SLO-2	Les nombres à partir de 31	La liaison	Où est mon sac	Un casting	Les pronoms personnels toniques
SLO-3	Les pays, les nationalités	Entrer en contact	Quelques objets	Le Petit Spirou	Les verbes faire et lire
SLO-4	Les jours de la semaine, Les jours	Présenter et se présenter	Les professions	L'aspect physique	Les Sons
SLO-5	Les mois de l'année, Les animaux domestiques	Demander et dire la date	La formation du féminin (2)	Le caractère	Décrire l'aspect physique
SLO-6	La famille (1)	Une rencontre.	Qu'est-ce que c'est?	les états d'âme	Demander et dire l'heure
SLO-7	La formation du féminin (1)	Contacts	C'est / Il est (1)	Les prépositions de lieu (1)	Elle est comment?
SLO-8	Les adjectifs possessifs	Emma la Championne	La phrase négative (1)	La famille (2)	Portraits

SLO-9	La phrase interrogative	Mots et expressions	Les verbes aller et venir	La formation du féminin	Mots et Expressions
SLO-10	Les nombres	Grammaire	Les formules de politesse	La formation du pluriel (2)	Grammaire.
SLO-11	Intonation et est-ce que	Communication	C'est qui?	Il y a	Communication
SLO-12	Les exemples	Les verbes du ER –groupe	Mots et Expressions	Les articles contractés	Les concepts

Resources			
1	"La Nouvelle Génération-AI" Méthode de français, Marie-Noëlle COCTON, P. DAUDA, L. GIACHINO, C. BARACCO, Les éditions Didier, Paris, 2018.	4	https://www.elearningfrench.com/learn-french-grammar-online-free.html
2	Cahier d'activités avec deux discs compacts.	5	https://www.lawlessfrench.com/grammar
3	https://www.fluentu.com/blog/french/french-grammar	6	https://blog.gymglish.com/2022/12/15/basic-french-grammar

Assessment

	Bloom's Level of Thinking	Continuous Learning Assessment (CLA) (50% weightage)								Final Assessment (50 % weightage)
		CLA – 1		CLA – 2		CLA – 3		CLA – 4 *		
		(10 %)		(10 %)		(20 %)		(10%)		
		Theory (%)	Practice (%)	Theory (%)	Practice (%)	Theory (%)	Practice (%)	Theory (%)	Practice (%)	Theory (%)
1	Remember	15	15	15	15	10	10	10	10	15
2	Understand	15	15	15	15	10	10	10	10	15
3	Apply	20	25	25	20	25	25	25	25	25
4	Analyze	20	25	25	20	25	25	25	25	25
5	Evaluate	15	10	10	15	15	15	15	15	10
6	Create	15	10	10	15	15	15	15	15	10
	Total (%)	100	100	100	100	100	100	100	100	100

Strategies

Technology		Pedagogy / Andragogy		Sustainable Development	
Simulations		Clarification/Pauses	✓	Good Health & Well Being	✓
Presentation Tools	✓	Group Discussion	✓	Quality Education	✓
Learning Management System	✓	Hands-on Practice	✓	Gender Equality	✓
		Debate	✓		
		Interactive Lecture	✓		
		Brainstorming	✓		

* The evaluation can be done on one or more parameters that include, (i) Seminars, (ii) Mini-Project, (iii) Case-Studies, (iv) MOOC Certification, (v) Publication of Article, (vi) Presentation of Research Work in Conferences, (vii) Assignments

Designers		
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2 Mr. Shrivathsan S, Journalist, Senior Sports Reporter/Sub-Editor, Times of India, Chennai shrivathsangilramhanga@gmail.com		2 Miss. Abigail A, Assistant Professor , SRMIST,,VDP abigaila@srmist.edu.in
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FACULTY OF SCIENCE AND HUMANITIES
SRM INSTITUTE OF SCIENCE AND TECHNOLOGY

Course Code	ULE24AE2J	Course Title	Business English					Category	A	ABILITY ENHANCEMENT COURSE	L	T	P	C
											2	0	2	3

Course Offering Department	English	Pre-requisite Courses	Nil	Co-requisite Courses	Nil	Progressive Courses	Nil	Data Book / Codes/Standards	Nil

CLR	The purpose of learning this course is to:		Depth				Attainment			Programme Learning Outcomes									
			1	2	3	4	1	2	3	1	2	3	4	5	6	7	8	9	10
CLR-1	Understand the critical component for success in the workplace and Organize regular speaking practice sessions where students can engage in conversations and discussions related to business scenarios.																		
CLR-2	Provide students with a collection of audio recordings or online resources that cover various business-related topics. These exercises should include comprehension questions and activities to improve listening skills, such as identifying main ideas, specific details, and understanding different accents.																		
CLR-3	Practice drafting and editing and Focus on developing skills in organization, clarity, coherence, and the appropriate use of business language and conventions.																		
CLR-4	Prepare clear, precise, readable written document																		
CLR-5	Learn to design documents to make information easily accessible																		

Depth columns: Conceive, Design, Implement, Operate
Attainment columns: Bloom's Level of Thinking, Expected Proficiency (%), Expected Attainment (%)
Programme Learning Outcomes: 1 Problem Solving, Critical Thinking, Creativity Solving; 2 Communication Skills, Collaborating Skills; 3 Independent Thinking, Analytical Reasoning, Learning to Learn ,Research Skills; 4 Qualities, Professionalism, Autonomy, Accountability; 5 Digital Technology Skills; 6 Value Inculcation, Multicultural inclusivity; 7 Environmental Action, Community Engagement; 8 Entrepreneurial Risk Taking; 9 Cultivating Critical Thinkers and Creative Communicators; 10 Advancing Knowledge and Scholarship in Language

CLO	At the end of this course, learners will be able to:	Conceive	Design	Implement	Operate	Bloom	Prof%	Att%	1	2	3	4	5	6	7	8	9	10
CLO-1	Communication Proficiency for various business contexts, including emails, reports, presentations, and negotiations.	✓	✓	-	-	2	85	75	3	3	3	3	2	1	-	3	3	3
CLO-2	Conversant with the basic forms and formats of Writing	✓	✓	✓	-	2	85	75	3	2	2	3	2	1	-	-	3	3
CLO-3	Enhance professional writing skills	✓	✓	✓	✓	3	85	75	3	2	2	3	2	1	-	3	3	3
CLO-4	To Prepare precise business documents by evaluating information, formulating arguments, and expressing opinions persuasively in English.	✓	✓	✓	✓	3	85	75	3	3	3	3	2	1	-	-	3	3
CLO-5	Foster collaborative communication skills for teamwork and multicultural business environments	✓	✓	✓	✓	3	85	75	3	3	3	3	2	1	-	3	3	3

Sessions	CLO - 1	CLO - 2	CLO - 3	CLO - 4	CLO - 5
	12	12	12	12	12
SLO-1	Introduction to Listening Skills as an important unit in communicationListening Process	Introduction to Communication Internal Communication	Introduction to Writing Business LettersImportance of writing skills	Introduction to Report WritingFeatures of Good Report	Importance of Business MeetingsTypes of Business Meetings
SLO-2	Listening is not the same as HearingTime Spent Communicating	Stake Holders in Internal CommunicationChannels and methods to use different Channels	Difference between Personal and Business LettersStructure & Format	Purpose of Report WritingDifferentiate between Business Report and Engineering report	Conducting MeetingsCommon Mistakes made at Meetings

FACULTY OF SCIENCE AND HUMANITIES

SRM INSTITUTE OF SCIENCE AND TECHNOLOGY

SLO-3 & 4	Purpose of listening and Principles of listeningListening Activity- Reflection Of Understanding Of Passive Listening And active listening- presentation by students	Internal Tele-ConversationSelf-Introductionsample tele-conversation- role play	Types Of Business Letters Writing E-Mails Email Writing Practice	Steps in Report WritingStructure of a Report Writing Practice- Hands-On Training	Students will be able to identify and correct common mistakes in sentence structure, grammar, and punctuation.Employment Communication In Official Scenarios- Role Play And Demo- Activity
SLO- 5	Classification of Listening and the purposeInformational Listening and the art of listening	Seeking and Giving InformationGiving Messages	Principles of E-mailE-mail Etiquette	Types of ReportsFormat of Reports	Students will be able to write a well-structured and professional resume that highlights their skills and experiences.Students will be able to create an appealing and professional design for their resumes, including proper formatting and layout.
SLO-6	Critical Listening Therapeutic or Empathetic Listening	Expression of GratificationExternal Communication	Overcoming problems in E-mail Communication	Oral Communication Skills	Reason for a Cover Letter to Apply for a Job
SLO-7 & 8	Other Listening TypesBarriers to Effective Listening ProcessEXPLAINING LISTENING BARRIERS BY STUDENTS	Stake HoldersPRESENTATION ABOUT STAKE HOLDERS	Writing Memos, What is a Memo?Principles of Precis Writing and purposeMemo Writing Example- Activity	Oral Business PresentationPurpose, Audience, LocaleBusiness Presentation Practice And Presentation With Ppt And Demo	Format of Cover LetterTypes of Cover LetterCover Letter Practice Writing
SLO-9	Categorization of Barriers to CommunicationHow to resolve the barriers for communication?	Channels of External CommunicationCross Organizational Video-Teleconferencing	Approaches to memo writingFormat of a Memo	Steps in Making a PresentationResearch and Planning	Group DiscussionUnderstand the Nature of Discussion
SLO- 10	Reading SkillsEffective Reading Strategies - 1 to 10	Briefing the OrganizationDescription of Product	CircularsGuidelines for writing Circulars	Structure and StylePreparation and Presentation	Difference between Debate and DiscussionWays to form and present the arguments
SLO-11 & 12	Purpose of ReadingTypes of ReadingTechniques for Effective ReadingImproving ComprehensionReading Component- A Story ofBankruptcyReading Activity- Pausing At Right Places And Intonation- Fluency And Speed In Reading- Prcatice Hour	Description of ProcessDescription of ServicesHolding Meetings over SkypeCommunication Network: ScopeTypes of Communication NetworkFormal Communication NetworkInformal Communication NetworkConducting a Elevator Pitch RoundTypes Of Communication- Enacting In Different Scenarios	Format of CircularsNotices-PurposeFormat of NoticesImportant Points to Note in a NoticeWriting Component: Preparing EmailsPreparing Memo and circulationof the samePreparing CircularPreparing Notices and the purpose- Writing Activity- Hands-On- Training	Delivering a PresentationMaking the Self PresentableDressing SenseClear Voice - Dos and Dont'sPlanning &AnalyzingStructuringManaging Body LanguageManaging Emotions Body Language And Managing Emotions- Demo And Model Enacting- Activity	Ways to DefendEmotional Intelligence: UnderstandingUnderstanding Individual NatureZohari Window ModelEncouraging Fellow ParticipantsMaking Communication More FriendlyKnapp's Relationship Escalation ModelConvincing Others by using Rhetorics Persuasion Activity- Role Play On Official Scenarios

Resources:

1	"English for Business Studies Student's Book: A Course for Business Studies and Economics Students" by Ian MacKenzie, Cambridge University Press, 2010	5	"English for Business Communication" by Simon Sweeney, Cambridge University Press, 2015.
2	"Business Communication: Building Critical Skills" by Kitty O. Locker and Stephen Kyo Kaczmarek, McGraw-Hill Education, 2021	6	"The Business Writer's Handbook" by Gerald J. Alred, Charles T. Brusaw, and Walter E. Oliu, Bedford/St. Martin's, 2021
3	"Business English: A Complete Guide to Developing an Effective Business Writing Style" by Andrea B. Geffner (1997)	7	"English for Business Studies Teacher's Book: A Course for Business Studies and Economics Students" by Ian Mackenzie (1997)
4	"Effective Business Writing: Strategies, Suggestions, and Examples" by Maryann V. Piotrowski (1998)	8	"Effective Business Communication" by Herta A. Murphy and Herbert W. Hildebrandt (1996)

Assessment

Bloom's Level of Thinking		Continuous Learning Assessment (CLA) (50% weightage)								Final Assessment (50 % weightage)
		CLA – 1		CLA – 2		CLA – 3		CLA – 4 *		
		(10 %)		(10 %)		(20 %)		(10%)		
		Theory (%)	Practice (%)	Theory (%)	Practice (%)	Theory (%)	Practice (%)	Theory (%)	Practice (%)	Theory (%)
1	Remember	15	15	15	15	10	10	10	10	15
2	Understand	15	15	15	15	10	10	10	10	15
3	Apply	20	25	25	20	25	25	25	25	25
4	Analyze	20	25	25	20	25	25	25	25	25
5	Evaluate	15	10	10	15	15	15	15	15	10
6	Create	15	10	10	15	15	15	15	15	10
	Total (%)	100	100	100	100	100	100	100	100	100

Strategies

Technology		Pedagogy / Andragogy		Sustainable Development	
Simulations		Clarification/Pauses	✓	Good Health & Well Being	✓
Presentation Tools	✓	Group Discussion	✓	Quality Education	✓
Learning Management System	✓	Hands-on Practice	✓	Gender Equality	✓
		Debate	✓		
		Interactive Lecture	✓		
		Brainstorming	✓		

* The evaluation can be done on one or more parameters that include, (i) Seminars, (ii) Mini-Project, (iii) Case-Studies, (iv) MOOC Certification, (v) Publication of Article, (vi) Presentation of Research Work in Conferences, (vii) Assignments

Designers					
Professional Experts		**Higher Institution Experts**		**Internal Experts**	
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2	Ann Mariya Thomson RA2232105010015, ll M.A English Literature CSH, SRM ISTaz1160@srmist.edu.in	2	Dr. K S AntonysamyAssociate Professor and Head, Dept. of English Loyola College Chennaiantonysamyks@loyolacollege.edu	2	Dr. Shanthichitra, Professor, & Head, Department of English, FSH,SRMIST,hod.doe.ktr@srmist.edu.in

Course Code	UDS24101J	Course Title		Programming using Java		Category	C	Discipline Core Course	L	T	P	C
									3	0	3	4

Course Offering Department	Computer Applications	Pre-requisite Courses	Nil	Co-requisite Courses	Nil	Progressive Courses	Nil	Data Book / Codes/Standards	Nil

CLR	The purpose of learning this course is to:	Depth				Attainment			Programme Learning Outcomes									
CLR-1	To understand the principles and concepts of Object Oriented Programming	1	2	3	4	1	2	3	1	2	3	4	5	6	7	8	9	10
CLR-2	To learn how to extend Java classes with inheritance and dynamic binding.																	
CLR-3	To learn how to produce robust programs in Java using Exception Handling																	
CLR-4	To achieve parallelism using threading concepts																	
CLR-5	To Develop the basics of Graphical User Interface Programming																	

CLO	At the end of this course, learners will be able to:	Conceive	Design	Implement	Operate	Bloom's Level of Thinking	Expected Proficiency (%)	Expected Attainment (%)	Problem Solving, Critical Thinking, Creativity	Communication Skills, Collaborating Skills	Independent Thinking, Analytical Reasoning, Learning to Learn Research Skills	Leadership Qualities, Professionalism, Autonomy, Accountability	Digital Technology Skills	Value Inculcation, Multicultural inclusivity	Environmental Action, Community Engagement	Entrepreneurial Risk Taking	PLO-1	PSO-2
CLO-1	Use an integrated development environment to write, compile, run, and test simple object-Oriented Java programs	✓	✓	-	-	2	85	75	3	-	2	2	3	-	-	2	2	2
CLO-2	Implement Java programs using classes, objects and also focused on garbage collection.	✓	✓	✓	-	2	85	75	3	2	2	2	2	-	-	3	3	3
CLO-3	Apply Exception handling and Parallelism in java applications	✓	✓	✓	✓	3	85	75	3	2	3	1	3	-	-	3	3	2
CLO-4	Identify and fixed defects and common security issues in code.	✓	✓	✓	✓	3	85	75	3	1	2	3	3	-	-	2	3	3
CLO-5	To gain knowledge in Applets, Event handling using AWT controls.	✓	✓	✓	✓	3	85	75	3	1	3	3	3	-	-	3	3	3

Sessions	CLO - 1	CLO - 2	CLO - 3	CLO - 4	CLO - 5
	Introduction to Java	Class & Constructors	Inheritance, Interface & Package	Multithreading, Utility Classes, Applet	Event Handling, AWT Control, I/O Streams
	18	18	18	18	18
SLO-1	Origin of Java, Impact of java over internet	Class fundamentals, Defining a Class, Creating Objects, Assigning object Reference Variables	Inheritance Basics, Understanding Types of Inheritance: Single, Multilevel ,Hierarchical Inheritance	Introduction to java Thread model, Creating a Thread by Extending Thread Class	Introduction to Event Handling, Understanding Action Event & Item Event, Key Event & Mouse Even
SLO-2	Java's magic : Byte Code , JVM,	Introduction to method, Accessing class members	Using Super keyword	Creating a Thread by implementing Runnable Interface, Thread Class,	Text Event, Window Event, Component Even, Introduction to Event Listener Interfaces - Working

				Creating multiple threads - Assigning Thread priorities	with Action Listener &, Adjustment Listener
SLO-3	Java Buzz words - Simple, Object Oriented, Robust, Multi-threaded, Architecture-Neutral, Interpreted and High performance, Distributed, Dynamic	Constructors, Characteristics of Constructors - Types of constructors - this Keyword	Method Overriding - Understanding Dynamic Method dispatch	Applying Synchronization - Inter-thread communication	Working with Container Listener, Item Listener, Component Listener - Working with Key Listener & Mouse Listener
SLO-4 - 6	**Lab 1 : Basic Java Program**	**Lab 4 : Classes and Objects**	**Lab 7: Inheritance, Method Overriding, Abstract classes and methods**	**Lab 10: Multi-threading**	**Lab 13: Event Handling**
SLO-7	Evolution of Java – Introduction to Object Oriented Concepts of Java	Java Destructor- Garbage Collection, Finalize ( ) Method, Overloading methods	Introduction to Abstract Keyword - Working with Abstract class and Method & Using final with inheritance	Introduction to Legacy Classes, Working with Vector class, Examples using Vector class	Introduction AWT Controls, Working with Laboratory, Working with Buttons controls
SLO-8	Encapsulation, Polymorphism, Inheritance	Overloading constructors – Using objects as parameters – Argument Passing	Introduction to Package, Creating a Package, Understanding Access Protection	Understanding Stack class - Examples using Stack class	Working with Check Boxes - Working with Checkbox Group controls
SLO-9	Introduction to Lexical Issues of Java	Returning Objects, Recursion	Importing packages – Introduction to Interfaces - Defining an interface	Introduction to Legacy Interfaces - Understanding Enumeration Interface, Examples using Enumeration interface	Working with Choice controls - Working with Lists controls, Working with Text Field controls
SLO-10 - 12	**Lab 2: Writing Simple Conversion Programs**	**Lab 5: Overloading Methods and Constructors, finalize() method**	**Lab 8: Packages and Interfaces**	**Lab 11: Legacy Classes and Interfaces**	**Lab 14: AWT Controls**
SLO-13	White spaces, Identifiers, Literals Comments, Separators ,Keywords, Introduction to Data types of Java - Byte, short, int, long, float, double, chars, Boolean	Introducing Access Control, Understanding Static variables and methods, Understanding Final variables And methods	Implementing Interfaces, How Interfaces are extended?	Introduction to Utility classes, Working with String Tokenizer, Working with Date class, Working with Calendar	Introduction to Layout Manager, Understanding Flow Layout, Understanding Border Layout, Understanding Grid Layout
SLO-14	variable, Declaring a variable, dynamicinitialization of variables - Scope and life time of variables	Working with Nested Class - Understanding Inner Class	What is Exception?, Understanding Exception Types, Introduction to Exception Handling - Working with try and catch	Working with Gregorian Calendar, Working with Random Class, Working with Scanner Class Examples using utility classes	Introduction to I /O Streams
SLO-15	Introduction to Operators, Working with Arithmetic, Relational, Logical, Bit wise, Conditional, Assignment Operators, Control Statements Overview of Array	Introduction to String Class and String Buffer Class - Working with String Handling Methods, Command Line arguments	Using multiple catch clauses, Working with Finally, Throw and throws, Understanding Built-in Exceptions - Creating user defined Exceptions	Introduction to Applets- Applet Life Cycle, Creating and Executing Applets - Applets Tags in HTML – Graphics Class	Byte Streams classes – Character Streams classes – Examples using Byte and Character

SLO-16 - 18	Lab 3:Arrays, Control Statements	Lab 6:String Class, Command Line Arguments	Lab 9:Exception Handling	Lab 12 :Utility Classes and Simple Applet Programs	Lab 15: Layout Managers, Byte and Character Streams

Resources				
1	Herbert Schildt,(2007),"Java:The Complete Reference",Twelfth Edition,Tata McGraw publication	4	Arnoldand J.Goslin,(2000),"The Java Programming Language", Fourth Edition, Addision Wesley
2	E. Balagurusamy, "Programming with Java", TataMc-Graw Hill, 5thEdition	5	Horstmann S., Gray Cornell (2001), Core Java 2 Volume In, Fundamentals, Addition Wesley, New York.
3	Amold and Gosling, J. (2000), The Java Programming Language, Addition Wesley, 2nd Edition, New Delhi.	6	Art Gittleman (2002), Ultimate Java Programming, Wiley Publications, New York.

Assessment

Bloom's Level of Thinking		Continuous Learning Assessment (CLA) (50% weightage)								Final Assessment (50 % weightage)	
		CLA – 1		CLA – 2		CLA – 3		CLA – 4 *			
		(10 %)		(10 %)		(20 %)		(10%)			
		Theory (%)	Practice (%)	Theory (%)	Practice (%)	Theory (%)	Practice (%)	Theory (%)	Practice (%)	Theory (%)	Practice (%)
1	Remember	15	15	15	15	10	10	10	10	15	15
2	Understand	15	15	15	15	10	10	10	10	15	15
3	Apply	20	25	25	20	25	25	25	25	25	25
4	Analyze	20	25	25	20	25	25	25	25	25	25
5	Evaluate	15	10	10	15	15	15	15	15	10	10
6	Create	15	10	10	15	15	15	15	15	10	10
	Total (%)	100	100	100	100	100	100	100	100	100	100

Strategies

Technology		Pedagogy / Andragogy		Sustainable Development	
Simulations		Clarification/Pauses	✓	Good Health & Well Being	✓
Presentation Tools	✓	Group Discussion	✓	Quality Education	✓
Learning Management System	✓	Hands-on Practice	✓	Gender Equality	✓
		Debate	✓		
		Interactive Lecture	✓		
		Brainstorming	✓		

* The evaluation can be done on one or more parameters that include, (i) Seminars, (ii) Mini-Project, (iii) Case-Studies, (iv) MOOC Certification, (v) Publication of Article, (vi) Presentation of Research Work in Conferences, (vii) Assignments

Designers					
Professional Experts		**Higher Institution Experts**		**Internal Experts**	
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Course Code	UDS24102J	Course Title	Fundamentals of Data Science		Category	C	Discipline Core Course	L	T	P	C
								3	0	3	4

Course Offering Department	Computer Applications	Pre-requisite Courses	Nil	Co-requisite Courses	Nil	Progressive Courses	Nil	Data Book / Codes/Standards	Nil

CLR	The purpose of learning this course is to:	Depth				Attainment			Programme Learning Outcomes										
CLR-1	Understand the basics of Data Science	1	2	3	4	1	2	3	1	2	3	4	5	6	7	8	9	10	
CLR-2	Learning the fundamentals of data types																		
CLR-3	Exploring essential skills required as mathematical and statistical analysis																		
CLR-4	Appreciate the applications and implications of Data Science using Python																		
CLR-5	Machine Learning with python																		

CLO	At the end of this course, learners will be able to:	Conceive	Design	Implement	Operate	Bloom's Level of Thinking	Expected Proficiency (%)	Expected Attainment (%)	Problem Solving, Critical Thinking, Creativity	Communication Skills, Collaborating Skills	Independent Thinking, Analytical Reasoning, Learning to Learn, Research Skills	Leadership Qualities, Professionalism, Autonomy, Accountability	Digital Technology Skills	Value Inculcation, Multicultural inclusivity	Environmental Action, Community Engagement	Entrepreneurial Risk Taking	PSO-1	PSO-2
CLO-1	Describe the significance of data science and understand the process	✓	✓	-	-	2	85	75	3	-	1	2	1	-	-	1	2	1
CLO-2	Understand different types of data description for data science process	✓	✓	✓	-	2	85	75	3	2	2	2	2	-	-	1	2	3
CLO-3	Gain knowledge on relationships between data	✓	✓	✓	✓	3	85	75	3	1	3	3	3	-	-	1	3	3
CLO-4	Use the Python Libraries for Data Wrangling	✓	✓	✓	✓	3	85	75	3	2	2	3	3	-	-	2	3	3
CLO-5	Apply visualization Libraries in Python to interpret and explore data	✓	✓	✓	✓	3	85	75	3	2	2	3	3	-	-	3	3	3

Sessions	CLO - 1 Introduction to Data Science 18	CLO - 2 Data Science Methodologies 18	CLO – 3 Python for Data Science 18	CLO - 4 Numpy & Data Manipulation 18	CLO - 5 Scientific Computing with Python 18
SLO-1	Introduction, Define data science	Introduction to Data Science Methodologies	Import pandas, Python Conditional Statements Describing Relationships, Correlation	Numpy and pandas Packages, Numpy ndarray	Getting Started with SciPy
SLO-2	Benefits and challenges, Data analytics vs Data mining	Business Understanding, Problem Statement Formulation	Scatter plot, Correlation co-efficient for quantitative data	Vectorization operation, Array indexing and slicing – Array transposing and swapping	SciPy Constants , Optimizers, SciPy Sparse Data , Graphs

SLO-3	Facets of data - Data science process overview, Defining research goals - Retrieving data	Analytic Understanding - Understanding Data Requirements, Data Collection – Data Understanding	Computation formula – Regression and multiple regression line, Least square regression line - Standard error estimation	Mathematical and statistical functions in numpy, Creation of data frame – Accessing rows and columns in data frame	SciPy Spatial Data Processing - SciPy Spatial Matlab Arrays SciPy Interpolation, Data Manipulation with Pandas - Getting Started with Data Manipulation with Pandas
SLO-4 - 6	**Lab 1: Write a Python script to print a statement**	**Lab 4: Reading different types of data sets (.txt, .csv) from Web and disk and writing in file in specific disk location.**	**Lab 7: Find the correlation Matrix.**	**Lab 10: Install, Import Scikit Learn and Explore Iris Dataset with Pandas for ML Modelling**	**Lab 13: Plot the histogram, bar chart and pie chart on sample data.**
SLO-7	Data preparation – EDA, Build the model - Findings a model	Modelling Data, Modelling Evaluation	Data structure and oops, Python programming procedure	Indexing, selection and filtering, Arithmetic operations in data frame	Reading Data from a Excel file, Reading Data from a .csv file
SLO-8	Data mining, Data warehousing	Data Science mathematical Preliminaries, Statistical inference – Population and samples	Statements – Expressions, Flow of control	Function application and mapping, Python libraries for Data wrangling	Reading Data from a .txt file
SLO-9	Basic statistical description of Data. Data Science Defined	Descriptive statistics – Correlation, Regression	Functions, Numerical data types – Sequence	Basics of numpy arrays – Aggregations Computation on arrays, Comparison, marks and Boolean logic - Fancy indexing, structural array	Data Visualization-Importing matplot lib - Getting started with Data Visualization, Getting started with Data Visualization Library Matplotlib - Density and contour plot
SLO- 10 - 12	**Lab 2: Perform Analysis on Simple Dataset for Data Science and Business Intelligence Applications**	**Lab 5: Install Python and apply all basic python functions and perform Numerical Array Processing using NumPy**	**Lab 8: Plot the correlation plot on dataset and visualize giving an overview of relationships among data on iris data.**	**Lab 11: Explore all the Data Visualization Graphs and Find the outliers using plot.**	**Lab 14: Install, Import Matplotlib. Explore all the Data Visualization Graphs and write a Python program for line chart**
SLO-13	Evolution of data science, Data Science Roles – Data Science Pipeline	Probability - Describing data, Types of data - Types of variables	Strings, tuples, List, Dictionaries	Data manipulation with pandas, Data selection - Data indexing	Visualizing errors, Three-dimensional plotting
SLO-14	Application of data science in various fields - Data Security Issues - Big data and data science hype, Data Science Vs business - Real world examples of role of data science	Describing data with tables and Graphs, Describing data with averages	Class, Constructors – Object Creation, Inheritance	Operations on data - Missing data, Hierarchical indexing – Combining dataset	Bar graph using matplotlib – Pie Graph using matplotlib, Column using matplolib - Box Plot using matplolib
SLO-15	Role of Data engineers – Data science impact on business, Data science vs AI vs ML vs Deep learning - Three Features for Data Science and Business Intelligence	Normal distribution - Standard score	Overloading - Text file - binary file, Reading CSV file, writing CSV file - Read and writing Excel File	Aggregation - Group, Pivot table, Getting Started with Numpy - Creating Numpy Arrays	Histogram using matplolib - Lineplots Using Matplotlib - Sub Plots Using Matplotlib, Scatter Plot Using Matplotlib – Plot Customizations, Saving Plots

| SLO-16 - 18 | Lab 3: Write a python Program for swapping two numbers and write a Python script for performing subset (), aggregate () functions on iris dataset. | Lab 6: Write a Python script to find basic descriptive statistics using summary, str, quartile function on mtcars & cars datasets | Lab 9: Install and perform a simple Exploratory Data Analysis using Pandas and Explore a Sample Dataset with it | Lab 12: Find the data distributions using box and Scatter plot. | Lab 15 : Python program for customizing plot |

Resources			
1	Jojo Moolayil, "Smarter Decisions,: The Intersection of IoT and Data Science", PACKT, 2016.	3	Cathy O'Neil and Rachel Schutt,, "Doing Data Science", O'Reilly, 2015.
2	David Dietrich, Barry Heller, Beibei Yang, "Data Science and Big data Analytics", EMC 2013	4	Kenneth A. Lambert, (2011), "The Fundamentals of Python: First Programs", Cengage Learning

Assessment

Bloom's Level of Thinking	Continuous Learning Assessment (CLA) (50% weightage)								Final Assessment (50 % weightage)	
	CLA – 1		CLA – 2		CLA – 3		CLA – 4 *			
	(10 %)		(10 %)		(20 %)		(10%)			
	Theory (%)	Practice (%)	Theory (%)	Practice (%)	Theory (%)	Practice (%)	Theory (%)	Practice (%)	Theory (%)	Practice (%)
1 Remember	15	15	15	15	10	10	10	10	15	15
2 Understand	15	15	15	15	10	10	10	10	15	15
3 Apply	20	25	25	20	25	25	25	25	25	25
4 Analyze	20	25	25	20	25	25	25	25	25	25
5 Evaluate	15	10	10	15	15	15	15	15	10	10
6 Create	15	10	10	15	15	15	15	15	10	10
Total (%)	100	100	100	100	100	100	100	100	100	100

Strategies

Technology		Pedagogy / Andragogy		Sustainable Development	
Simulations		Clarification/Pauses	✓	Good Health & Well Being	✓
Presentation Tools	✓	Group Discussion	✓	Quality Education	✓
Learning Management System	✓	Hands-on Practice	✓	Gender Equality	✓
		Debate	✓		
		Interactive Lecture	✓		
		Brainstorming	✓		

* The evaluation can be done on one or more parameters that include, (i) Seminars, (ii) Mini-Project, (iii) Case-Studies, (iv) MOOC Certification, (v) Publication of Article, (vi) Presentation of Research Work in Conferences, (vii) Assignments

Designers					
Professional Experts		**Higher Institution Experts**		**Internal Experts**	
1	Mr.Jothi Periaswamy, Founder/Chief Data Scientist, DeepSphere AI, 2 Venture Drive, #13-26 Vision Exchange, Singapore, 608526	1	Dr.S.Gopinathan, Professor and Head, Department of Computer Science, University of Madras, Guindy Campus,,Chennai-600025	1	Dr.Ananthi Claral Mary T, SRMIST, KTR Campus

FACULTY OF SCIENCE AND HUMANITIES
SRM INSTITUTE OF SCIENCE AND TECHNOLOGY

Course Code	UMS24103T	Course Title	Mathematics for Artificial Intelligence	Category	C	Discipline Core Course	L	T	P	C
							4	0	0	4

Course Offering Department	Mathematics and Statistics	Pre-requisite Courses	NIL	Co-requisite Courses	NIL	Progressive Courses	NIL	Data Book / Codes/Standards	NIL

CLR	The purpose of taking this course is to:	Depth				Attainment			Programme Learning Outcomes									
		1	2	3	4	1	2	3	1	2	3	4	5	6	7	8	9	10
CLR-1	To apply the basic concepts and theorems of matrices.																	
CLR-2	To learn the basic concepts of differentiation, basic concepts of integration and to apply Bernoulli's formula.																	
CLR-3	To learn the concepts of connectives, validity of arguments and normal forms.																	
CLR-4	Apply Logic, truth table in computer science.																	
CLR-5	To Understand the concept of Graphs, isomorphism of graph, Eulerian graph and Hamiltonian graph.																	

Depth columns: Conceive, Design, Implement, Operate
Attainment columns: Bloom's Level of Thinking, Expected Proficiency (%), Expected Attainment (%)
PLO columns: 1 Problem Solving, Critical Thinking, Creativity; 2 Communication Skills, Collaborating Skills; 3 Independent Thinking, Analytical Reasoning, Learning to Learn, Research Skills; 4 Leadership Qualities, Professionalism, Autonomy, Accountability; 5 Digital Technology Skills; 6 Value Inculcation, Multicultural inclusivity; 7 Environmental Action, Community Engagement; 8 Entrepreneurial Risk Taking; 9 PSO-1; 10 PSO-2

CLO	At the end of this course, learners will be able to:	Conceive	Design	Implement	Operate	Bloom	Prof	Attain	1	2	3	4	5	6	7	8	PSO-1	PSO-2
CLO-1	Gain knowledge in basic concepts of matrix method.	✓	✓	-	-	2	85	75	3	-	-	-	-	-	-	-	-	-
CLO-2	Understand the concepts of differentiation and to solve the problems of Radius of curvature.	✓	✓	✓	-	2	85	75		3	-	-	-	-	-	-	-	-
CLO-3	Understand the concepts of integration and to evaluate Bernoulli's formula.	✓	✓	✓	✓	3	85	75	3	-	-	-	-	-	-	-	-	-
CLO-4	Logical knowledge through the Statements, connectives, arguments, validity of arguments and Normal forms using truth tables	✓	✓	✓	✓	3	85	75	-	3	-	-	-	-	-	-	-	-
CLO-5	Understand the concepts of Graphs terminology Sub graphs, Acyclic, Euler path, Hamiltonian Path	✓	✓	✓	✓	3	85	75	-	-	-	-	3	-	-	-	-	-

Sessions	CLO - 1	CLO - 2	CLO - 3	CLO – 4	CLO - 5
	Matrices	Differentiation and Integration	Logics	Introduction to Graph Theory	Trees
	12	12	12	12	12
SLO-1	Definition and types of matrix- Examples	Introduction to Differentiation- Solving basic problems	Logic -Basic explanation-Statements- simple compound- Symbolic representation	Graphs and Their Representation- Basic Graph terminology- Simple Problems	Trees- Basic Definitions-
SLO-2	Symmetric matrix - Skew symmetric matrix	Minima and maxima of functions of single variable	Connectives explanation-conjunction, disjunction, negation- Simple problems	Drawings of Graphs-Special Families of Graphs- Simple Problems	Basic properties of Trees-Labeled Trees
SLO-3	Hermitian matrix- Skew Hermitian matrix	Problems based on Minima and maxima of functions of single variable	Problems using Truth Tables-Tautology, contradiction-Problems using Truth Tables	Incidence graphs - Simple Problems	Problems based on the concepts-Undirected Trees- Simple Problems

SLO-4	Orthogonal matrix -Unitary matrix	Problems using maxima and minima	Logical equivalence- Simple truth table problems	Adjacency Matrices- Problems- vertex degrees matrices	Binary trees- Rooted Trees and Branches
SLO-5	Eigen vectors of a matrix	Introduction to curvature- Radius of curvature (Cartesian co-ordinate)	Tautological implications- Simple problems	Isomorphism of Graphs- Simple Problems	Spanning Trees- Simple problems
SLO-6	Eigen values and eigen vectors of a matrix	Problems based on radius of curvature	Arguments- validity of arguments- Simple problems	Sub graphs- Acyclic Graphs- Simple Problems	Minimal Spanning Trees- Simple Problems
SLO-7	Cayley Hamilton theorem	Introduction to integration- Basic problems on integration- Integration of polynomial functions- Problems based on Integration of polynomial functions	Normal forms – Minterms and maxterms	Digraphs- Problems using Graphs	Problems based on Minimal Spanning Trees
SLO-8	Problems of order 2 based on Cayley Hamilton theorem	Integration by the method of substitution- Problems based on Integration by the method of substitution	Maxterms with examples- Problems using Truth tables	Paths, cycles and connectivity- Euler path and circuits	Kruskal's Algorithm
SLO-9	Problems of order 3 based on Cayley Hamilton theorem	Integration of rational and irrational functions- Integration of the type $$\int \frac{P(x)}{Q(x)}\,dx$$ Integration by the method of partial fraction	Principal disjunctive normal form	Eulerian cycles- Euler path and Circuits-.	Rooted Tree
SLO-10	Cramer's rule- Problems order 2 based on Cramer's rule.	Integration of the form $$\int \frac{dx}{ax^2+bx+c}$$	Problems using Truth tables	Hamiltonian Path and Circuits	binary Tree and Simple Problems
SLO-11	Problems of order 3 based on Cramer's rule.	Bernoulli's formula for Integral by parts	Principal conjunctive normal form	Problems using Hamiltonian Path- Simple Problems	Expression of Trees- Simple Problems
SLO-12	Problems of order 3 based on Cramer's rule.	Problems based on Bernoulli's formula for Integral by parts.	Problems using Truth tables	Problems using Hamiltonian Path- Simple Problems	Expression of Trees- Simple Problems

Resources		
1	Discrete Mathematics with Graph Theory and Combinatorics by T. Veerajan, McGraw Hill Education (India) Pvt Limited, 2007	3 Dr. A. Singaravelu, Allied Mathematics, 7th edition, A. R. Publications, 2015
2	Discrete Mathematics by V, Sundaresan, K. S. Ganapathy Subramanian, K. Ganesan, A. R. Publications, 1996.	

Assessment						
Bloom's Level of Thinking	Continuous Learning Assessment (CLA) (50% weightage)				Final Assessment (50 % weightage)	
	CLA – 1	CLA – 2	CLA – 3	CLA – 4 *		
	(10 %)	(10 %)	(20 %)	(10%)		
	Theory (%)	Theory (%)	Theory (%)	Theory (%)	Theory (%)	
1 Remember	15	15	10	10	15	
2 Understand	15	15	10	10	15	
3 Apply	20	25	25	25	25	
4 Analyze	20	25	25	25	25	
5 Evaluate	15	10	15	15	10	
6 Create	15	10	15	15	10	
Total (%)	100	100	100	100	100	

Strategies					
Technology	Pedagogy / Andragogy		Sustainable Development	
Simulations	Clarification/Pauses	✓	Good Health & Well Being	✓
Presentation Tools ✓	Group Discussion	✓	Quality Education	✓
Learning Management System ✓	Hands-on Practice	✓	Gender Equality	✓
	Debate	✓		
	Interactive Lecture	✓		
	Brainstorming	✓		

* The evaluation can be done on one or more parameters that include, (i) Seminars, (ii) Mini-Project, (iii) Case-Studies, (iv) MOOC Certification, (v) Publication of Article, (vi) Presentation of Research Work in Conferences, (vii) Assignments

Designers				
Professional Experts		Higher Institution Experts		Internal Experts
1 Dr. D. Arivudai nambi, Anna University, Chennai	1	Dr. N.Viswanathan, , Presidency college , Chennai	1	Dr.S.Saravanakumar, SRM IST
			2	Dr.S.Poongodisathya, SRM IST

Course Code	UCD24S01J	Course Title	Verbal Ability and Skill Development			Category	S	Skill Enhancement Courses	L	T	P	C
									1	0	2	2

Course Offering Department	Career Guidance	Pre-requisite Courses	Nil	Co-requisite Courses	Nil	Progressive Courses	Nil	Data Book / Codes/Standards	Nil

CLR	The purpose of learning this course is to:	Depth				Attainment			Programme Learning Outcomes									
		1	2	3	4	1	2	3	1	2	3	4	5	6	7	8	9	10
CLR-1	Expose students to right attitudinal and behavioral aspects and to build the same through activities																	
CLR-2	Develop and nurture interpersonal skills of the students through individual and group activities.																	
CLR-3	Increase efficiency and leadership skills to improve team results.																	
CLR-4	Use the basic mechanics of Grammar.																	
CLR-5	Instill confidence in students and develop skills necessary to face the challenges of competitive exams and placements																	

CLO	At the end of this course, learners will be able to:	Conceive	Design	Implement	Operate	Bloom's Level of Thinking	Expected Proficiency (%)	Expected Attainment (%)	Problem Solving, Critical Thinking, Creativity Solving	Communication Skills, Collaborating Skills	Independent Thinking, Analytical Reasoning, Learning to Learn Research Skills	Leadership Qualities, Professionalism, Autonomy, Accountability	Digital Technology Skills	Value Inculcation, Multicultural inclusivity	Environmental Action, Community Engagement	Entrepreneurial Risk Taking	PSO-1	PSO-2
CLO-1	Re-engineer their attitude and understand its influence on behaviour	✓	✓	-	-	2	85	75	2	3	2	2	-	1	2	3	-	-
CLO-2	Acquire inter-personal skills and be an effective goal-oriented team player	✓	✓	✓	-	2	85	75	3	3	2	3	-	1	2	1	-	-
CLO-3	Learn the importance of inner management and creativity	✓	✓	✓	✓	3	85	75	3	2	2	3	-	1	2	2	-	-
CLO-4	Understand the correct usage of grammar	✓	✓	✓	✓	3	85	75	3	-	3	-	3	1	1	-	-	-
CLO-5	Help the students succeed in competitive exams and placements	✓	✓	✓	✓	3	85	75	3	-	3	-	3	1	1	-	-	-

Sessions	CLO - 1	CLO - 2	CLO - 3	CLO – 4	CLO - 5
	9	9	9	9	9
SLO-1	Introduction to IKIGAI, IKIGAI – Key concepts	Networking skills – relationship building, value exchange, active listening, friendliness and positivity, clear communication	Time management skills - Value of Time, Pomodoro technique.	Basics of Grammar	Sentence Correction
SLO-2	Attitude, Attitude formation and Factors influencing Attitude	Negotiation skills – building rapport and problem-solving	Weekly Planner, To do list, Prioritizing work, Time management activity	Spotting Errors	Sentence completion (Grammar based)

SLO-3	SWOT Analysis, individual SWOT Analysis -SWOT Analysis activity	Entrepreneurial Skills, Entrepreneurial knowledge, Focus, Investment, Risk tolerance, Resilience, Ethics	Creative thinking skills – divergent thinking, Synthesis and collaboration, out-of -the - box thinking	Error spotting based on Parts of Speech	Sentence completion (Vocabulary based)
SLO-4	Presentation skills, Types of presentation, Structure of presentation, Delivery techniques	Creating brands – activity (posters, flyers, business cards)	Creative thinking skills Activity session	Errors how to avoid in Nouns & Pronouns	Cause and Effect - Introduction
SLO-5	Extempore Practice Session I	Stress Management - Causes of Stress and Its Impact	Brainstorming, use of groups and individual brainstorming techniques to promote idea generation	Common Errors: Subject - verb Agreement	Cause and Effect – Practise Session
SLO-6	Extempore Practice Session II	How to Manage Stress and distress, Understanding the circle of control, stress busters	Intercultural communication – beliefs, customs and attitudes of people in different countries (US, UK, Japan, West Asia, China, Russia), Social and cultural etiquettes	Vocabulary - Synonyms - Antonyms - Phrasal verbs-	Theme detection – Introduction - Practice session
SLO-7	Interpersonal Skills, Emotional Intelligence	Conflict Management - Conflict in human relations – reasons, Approaches to conflict resolution	Communication etiquettes, Telephone etiquettes	One Word Substitution - Homophones – Homonyms	Critical Reasoning and Verbal deduction
SLO-8	Importance of Team Work, Team Building activity	Conflict resolutions – Case studies	Ice breaking, Designing ice breaker games	Words often confused	Types of Critical Reasoning-Tips and Tricks
SLO-9	Leadership skills, Leadership skills -based activity	Importance of decision making, Process of decision making, Practical ways of decision making, weighing positives and negatives	Resume writing skills	Idioms and Idiomatic Expressions – Introduction	Word Analogy - Types of Word analogy

Resources			
1	Jeff Butterfield, Soft Skills for Everyone, CENGAGE, India,2015	5	Dr. K. Alex, Soft Skills, S. Chand Publishing & Company, India, 2014
2	Covey Sean, Seven habits of highly effective teens, Simon & Schuster, NewYork, 2014	6	Carnegie Dale, How to win friends and influence people, Simon and Schuster, New York, 2016
3	Thomas A Harris, I am ok, you are ok, Arrow, London, 2012	7	Daniel Coleman, Emotional Intelligence, Bloomsbury, India, 2016
4	Norman Lewis, Word Power Made Easy New Revised and Expanded Edition, Goyal publication, 2011	8	Bhatnagar R P, English for Competitive Examinations, Trinity Press, 2016.

Assessment									
Bloom's Level of Thinking	**Continuous Learning Assessment (CLA) (100% weightage)**								
	CLA – 1		**CLA – 2**		**CLA – 3**		**CLA – 4 ***		
	(20 %)		**(20 %)**		**(30 %)**		**(30%)**		
	Theory (%)	**Practice (%)**	**Theory (%)**	**Practice (%)**	**Theory (%)**	**Practice (%)**	**Theory (%)**	**Practice (%)**	
1 Remember	15	15	15	15	10	10	10	10	
2 Understand	15	15	15	15	10	10	10	10	
3 Apply	20	25	25	20	25	25	25	25	
4 Analyze	20	25	25	20	25	25	25	25	
5 Evaluate	15	10	10	15	15	15	15	15	
6 Create	15	10	10	15	15	15	15	15	
Total (%)	100	100	100	100	100	100	100	100	

Strategies					
Technology		**Pedagogy / Andragogy**		**Sustainable Development**	
Simulations		Clarification/Pauses	✓	Good Health & Well Being	✓
Presentation Tools	✓	Group Discussion	✓	Quality Education	✓
Learning Management System	✓	Hands-on Practice	✓	Gender Equality	✓
		Debate	✓		
		Interactive Lecture	✓		
		Brainstorming	✓		

* The evaluation can be done on one or more parameters that include, (i) Seminars, (ii) Mini-Project, (iii) Case-Studies, (iv) MOOC Certification, (v) Publication of Article, (vi) Presentation of Research Work in Conferences, (vii) Assignments

Course Designers		
Professional Experts	**Higher Institution Experts**	**Internal Experts**
1 Mr. P. Chockalingam, Senior Lead Software Engineer, Virtusa Consulting Services Private Ltd, DLF IT Park SEZ, Chennai – 600089, p.chockalingam1986@gmail.com-	1 Dr. G. Saravana Prabu, Asst. Professor, Department of English, Amrita Vishwa Vidhyapeetham, Coimbatore - 641112 g_saravanaprabu@cb.amrita.edu-	1 Dr. Sathish K, HOD, Department of Career Guidance Cell, FSH, SRMIST, hod.dcgc.ktr@srmist.edu.in
		2 Dr. Sam Israel S, Assistant Professor, Department of Career Guidance Cell, FSH, SRMIST, samisras@srmist.edu.in
		3 Mrs.Deepalakshmi S, Assistant Professor, Department of Career Guidance Cell, FSH, SRMIST, deepalas@srmist.edu.in

SEMESTER - II

Course Code	ULT24AE2J	Course Title	Tamil - II						Category	A	Ability Enhancement Course	L	T	P	C
												2	0	2	3

Course Offering Department	Tamil	Pre-requisite Courses	Nil	Co-requisite Courses	Nil	Progressive Courses	Nil	Data Book / Codes/Standards	Nil

CLR	The purpose of learning this course is to:	Depth				Attainment			Programme Learning Outcomes										
		1	2	3	4	1	2	3	1	2	3	4	5	6	7	8	9	10
CLR-1	சங்க இலக்கியங்கள் வழிதொன்மை அக, புற வாழ்வியலை அறியச்செய்தல்																		
CLR-2	தமிழ்ச் சமூகத்தின் அறவியல் குறித்து தெரியச்செய்தல்																		
CLR-3	பக்தி இலக்கியங்கள் போதித்த மனித மாண்புகளை உணரச்செய்தல்																		
CLR-4	பண்டைத்தமிழ்ச் சமூகத்தின் தொல்இலக்கியங்கள் வளர்ச்சி பெற்றவரலாற்றைப் புரியச் செய்தல்																		
CLR-5	சிறுகதைகள் சொல்லும் வாழ்வியல் நெறி, மொழியின் நுட்பங்கள் ஆகியவற்றைத் தெரியச்செய்தல்																		

CLO	At the end of this course, learners will be able to:	Conceive	Design	Implement	Operate	Bloom's Level of Thinking	Expected Proficiency (%)	Expected Attainment (%)	Problem Solving, Critical Thinking, Creativity Solving	Communication Skills, Collaborating Skills	Independent Thinking, Analytical Reasoning, Learning to Learn Research	Leadership Qualities, Professionalism, Autonomy, Accountability	Digital Technology Skills	Value Inculcation, Multicultural inclusivity	Environmental Action, Community Engagement	Entrepreneurial Risk Taking	PSO 1	PSO 2
CLO-1	பண்டைத் தமிழ்ச் சமூகத்தின்அக, புறவாழ்வியல் இன்றைய சமூகமேம்பாட்டிற்கு வழிகாட்டி நிற்பதை அறிந்து கொள்ளுதல்	✓	✓	-	-	2	75	60	-	3	3	-	-	-	2	-	-	-
CLO-2	தமிழ்ச்சமூகம்அறத்தைவலியுறுத்தியசமூகம்என்பதன்வழிமானுடஅறத்தைத்தெரிந்துகொள்ளுதல்	✓	✓	✓	-	2	80	70	2	-	3	-	-	3	-	-	-	-
CLO-3	பக்திஇலக்கியம்மூலம்இறைத்தந்துவங்களைஅறிந்துமானுடஒற்றுமைமேம்பாட்டைஅறிந்துகொள்ளுதல்	✓	✓	✓	✓	2	70	65	-	3		3		1	-	-	-	-
CLO-4	தொல்தமிழ்ச்சமூகம்இலக்கியம், அரசியல், அறம், பக்திஆகியவற்றில்தழைத்தோங்கியதைத்தெரிந்துகொள்ளுதல்	✓	✓	✓	✓	2	70	70	3	-	3	-	-	3	-	-	-	-
CLO-5	வாழ்வியலின்நெறிகளைச்சொல்லும்கதைகளைப்படைக்கும்திறனோடுமொழிஆளுமையையும்அறிந்துகொள்ளுதல்	✓	✓	✓	✓	3	80	70	3	-	-	2	-	-	-	3	-	-

Sessions	CLO – 1	CLO - 2	CLO - 3	CLO - 4	CLO – 5
	12	12	12	12	12
SLO-1	காலந்தோறும்தமிழ்அகத்திணைமரபு - உள்ளடக்கம்	சங்கமருவியகாலம்அறமும்வாழ்வியலும்	பல்லவர்காலஇலக்கியங்கள்	பண்டைக்காலத்தமிழகம்சங்ககாலமக்களின்வாழ்வியல்	தமிழ்ச்சிறுகதையும்தமிழ்ச்சமூகவாழ்வியலும்
SLO-2	எட்டுத்தொகைநூல்களும்பகுப்புமுறையும்	உலகப்பொதுமறை - திருக்குறள்கட்டமைப்பு	பக்தியும்தமிழும் - பக்திஇலக்கியத்தோற்றநிலை	முச்சங்கஅறிமுகமும்வரலாறும்	புதுமைப்பித்தன் - சங்குத்தேவனின்தர்மம்
SLO-3	ஐங்குறுநூறு – 375, 391	திருக்குறள்வான்சிறப்பு (2)	சைவசமயஇலக்கியங்கள் - சைவக்குரவர்நால்வர்	சங்கஇலக்கியப்பாடுபொருளும்வடிவமும்	ந·பிச்சமூர்த்தி – வேப்பமரம் - மரபும்நம்பிக்கைகளும்
SLO-4	குறுந்தொகை – 02, 03	திருக்குறள் – புலவிநுணுக்கம் (132) -	தேவாரம் – திருஞானசம்பந்தர் - 2834 திருநாவுக்கரசர் - 4262	எட்டுத்தொகைநூல்களின்வரலாறும்கட்டமைப்பும்	தமிழருவிமணியன் – ஒற்றைச்சிறகு - உறவின்மேன்மை
SLO-5	அகநானூறுநூல்கட்டமைப்பு	தமிழ்இலக்கியமரபில்நீதிஇலக்கியங்கள்	திருவாசகம்-மாணிக்கவாசகர்ஆனந்தபரவசம் – பாடல் 10	பத்துப்பாட்டுநூல்களின்வரலாறும்வாழ்வியலும்	ஆர்· சூடாமணி – மூடநம்பிக்கை.
SLO-6	அகநானூறு -238	நாலடியார்வைகலும் - பாடல்எண் 39	வைணவசமயவளர்ச்சிப்போக்கு	பதினெண்கீழ்க்கணக்கும்தமிழர்அறமரபும்	கிருஷ்ணாடாவின்ஸி – காலாஅருகேவாடா
SLO-7	கலித்தொகை – 11	நீதிஇலக்கியத்தில்மருந்துநூல்கள்	நாலாயிரத்திவ்யப்பிரபந்தம் குலசேகராழ்வார்பாடல்- 678	பதினோருநீதிஇலக்கியங்கள்	மொழிப்பயிற்சிசொற்களைஉருவாக்குதல்
SLO-8	தமிழர்புறமரபு-புறநானூறு-107	சிறுபஞ்சமூலம் -64	ஆண்டாள்பாடல் – 574. திருமழிசைஆழ்வார்பாடல்	காப்பியஇலக்கணம் - காப்பியங்களின்வகைமை	எழுத்துகளில்இருந்துசொற்களைக்கண்டுபிடித்தல்
SLO-9	புறநானூறு -110, 112	பழமொழிநானூறுஅறிமுகம் – தனித்தன்மைகள்	தமிழில்இஸ்லாமியஇலக்கியங்கள்	ஐம்பெருங்காப்பியங்கள்	படம்பார்த்துக்கதைஎழுதுதல்

SLO-10	பத்துப்பாட்டும்ஆற்றுப்படைநூல்களும்	பழமொழிநானூறு - 184	சீறாப்புராணம் - விடமீட்டப்படலம் -10 பாடல்கள்	தமிழ்ச்சமூகமும்சமயத்தத்துவங்களும்	படம்பார்த்துக்கவிதைஎழுதுதல்
SLO-11	சிறுபாணாற்றுப்படை: 84-115	பண்டைக்காலப்போரும்வாழ்வும் - புறம்	தமிழில்கிறித்தவஇலக்கியங்கள்	பன்னிருதிருமுறை – அறிமுகம், வரலாறு	கற்பனையும்படைப்பும்–தமிழில்வாசகம்
SLO-12	பட்டினப்பாலை: 40-50	களவழிநாற்பது - 40	கிறித்துவின்அருள்வேட்டல் – திரு.வி.க. அலகிலொளி- 5 பாடல்	நாலாயிரத்திவ்வியப்பிரபந்தம் – அறிமுகம், வரலாறு	விளம்பரத்திற்குவாசகம்எழுததல்

Resources			
1	கொன்றை, தொகுப்பும்பதிப்பும் - தமிழ்த்துறைஆசிரியர்கள், தமிழ்த்துறை, எஸ்.ஆர்.எம். அறிவியல்மற்றும்தொழில்நுட்பக்கல்விநிறுவனம், காட்டாங்குளத்தூர், 603203, 2023	4	தமிழண்ணல், புதியநோக்கில்தமிழ்இலக்கியவரலாறு, மீனாட்சிபுத்தகநிலையம், மதுரை, **2017**
2	மு. அருணாசலம், தமிழ்இலக்கியவரலாறு, நூற்றாண்டுமுறை (9ஆம்நூ. முதல் 16 வரை), திபார்க்கர், சென்னை, 2005	5	தமிழ்இலக்கியத்தொடரடைவு
3	மதுரைதமிழ்இலக்கியமின்தொகுப்புத்திட்டம்	6	தமிழ்இணையக்கல்விக்கழகம்

Assessment									
		Continuous Learning Assessment (CLA) (50% weightage)							Final Assessment (50 % weightage)
		CLA – 1		CLA – 2		CLA – 3		CLA – 4 *	
		(10 %)		(10 %)		(20 %)		(10%)	
	Bloom's Level of Thinking	Theory (%)	Practice (%)	Theory (%)	Practice (%)	Theory (%)	Practice (%)	Theory (%)	Practice (%)	Theory (%)

	Bloom's Level of Thinking	Theory (%)	Practice (%)	Theory (%)	Practice (%)	Theory (%)	Practice (%)	Theory (%)	Practice (%)	Theory (%)
1	Remember	15	15	15	15	10	10	10	10	15
2	Understand	15	15	15	15	10	10	10	10	15
3	Apply	20	25	25	20	25	25	25	25	25
4	Analyze	20	25	25	20	25	25	25	25	25
5	Evaluate	15	10	10	15	15	15	15	15	10
6	Create	15	10	10	15	15	15	15	15	10
	Total (%)	100	100	100	100	100	100	100	100	100

Strategies					
Technology		Pedagogy / Andragogy		Sustainable Development	
Simulations		Clarification/Pauses	✔	Good Health & Well Being	✔
Presentation Tools	✔	Group Discussion	✔	Quality Education	✔
Learning Management System	✔	Hands-on Practice	✔	Gender Equality	✔
		Debate	✔		
		Interactive Lecture	✔		
		Brainstorming	✔		

* The evaluation can be done on one or more parameters that include, (i) Seminars, (ii) Mini-Project, (iii) Case-Studies, (iv) MOOC Certification, (v) Publication of Article, (vi) Presentation of Research Work in Conferences, (vii) Assignments

Designers				
Professional Experts		**Higher Institution Experts**		**Internal Experts**

	Professional Experts		Higher Institution Experts		Internal Experts
1	Dr. P.R.Subramanian, Director, Mozhi Trust, Thiruvanmiyur, Chennai – 600 041.	1	Dr. V. Dhanalakshmi, Associate Professor, Subramania Bharathi School of Tamil Language & Literaturel, Pondicherry University, Pondicherry	1	Dr. B.Jaiganesh, Associate Professor & Head, Dept. of Tamil, FSH, SRMIST, KTR.
				2	Dr. R. Ravi, Assistant Professor and Head, Dept. of Tamil, FSH, SRMIST, VDP.
				3	Mr. G. Ganesh, Assistant Professor, Dept. of Tamil, FSH, SRMIST, RMP.
				4	Dr. T.R.Hebzibah beulah Suganthi, Assistant Professor, Dept. of Tamil, FSH, SRMIST, KTR.
				5	Dr. S.Saraswathy, Assistant Professor, Dept. of Tamil, FSH, SRMIST, KTR.

Course Code	ULH24AE2J	Course Title	Hindi - II			Category	A	Ability Enhancement Course	L	T	P	C
									2	0	2	3

Course Offering Department	Hindi	Pre-requisite Courses	Nil	Co-requisite Courses	Nil	Progressive Courses	Nil	Data Book / Codes/Standards	Nil

CLR	The purpose of learning this course is to:	Depth				Attainment			Programme Learning Outcomes										
CLR-1	They get to learn Ancient ,Medieval,and Modern poetry	1	2	3	4	1	2	3	1	2	3	4	5	6	7	8	9	10
CLR-2	To understand the Significance of poems of great poets like Kabir,Tulsidas,Bihari and Dhananand								Problem Solving, Critical Thinking, Creativity Solving	Communication Skills, Collaborating Skills	Independent Thinking, Analytical Reasoning, Learning to Learn ,Research Skills	Leadership Qualities, Professionalism, Autonomy, Accountability	Digital Technology Skills	Value Inculcation, Multicultural inclusivity	Environmental Action, Community Engagement	Entrepreneurial Risk Taking	PSO-1	PSO-2
CLR-3	To Enhance and Enrich their knoeledge through poetry																	
CLR-4	Media based understanding for employability																	
CLR-5	Job Oriented writing skills																	

CLO	At the end of this course, learners will be able to:	Conceive	Design	Implement	Operate	Bloom's Level of Thinking	Expected Proficiency (%)	Expected Attainment (%)										
CLO-1	To provide a brief Introduction of Hindi poetry(Bhaktikal,Reetikal and Aadhunikkal)	☑	☑	-	-	2	85	75	3	2	3	-	-	2	-	-	-	-
CLO-2	To Discuss the origin and development of various forms of poetry in Hindi	☑	☑	☑	-	2	85	75	3	-	2	-	3	-	3	-	-	-
CLO-3	Focus on Evaluating the social changes through poetry	☑	☑	☑	☑	3	85	75	-	3	-	3	3	2	-	-	-	-
CLO-4	To Examine Transcreation in advertisement	☑	☑	☑	☑	3	85	75	2	-	2	3	-	-	2	-	-	-
CLO-5	To guide the students in the learning of the technical aspect of the Hindi Languge,this would help them in the field administration	☑	☑	☑	☑	3	85	75	-	3		3	3	2	-	-	-	-

Sessions	CLO - 1	CLO - 2	CLO - 3	CLO - 4	CLO – 5
	12	12	12	12	12
SLO-1	BHAKTI KALIN KAVITA	RITI KALIN KAVITA	ADHUNIK KAVITA	VIGYAPAN	PATRA LEKHAN&PARIBHASHIK SHABDAVALI
SLO-2	BHAKTIU KALIN KAITA KI AVADHARNA	AVADHARNA EVM SAWROOP	AVADHARNA EVM SAWROOP	AWADHARNA EVM SAROOP	AVADHARNA EVM SAROOP
SLO-3	SWARUP EVM MAHATWA	RITI KAL VIBHAJAN	MAHATVA EVM UDDESHYA	ARTH EVM PARIBHASHA	ARTH EVM PARIBHASHA

SLO-4	BHAKTIKAL KI PRASANGIKTA	MAHATVA EVM UDDESHYA	MATHLI SHARAN GUPT- NAR HO NA NIRASH KARO MAN KO	VIGYAPAN KE PRAKAR	PRAYOJAN EVM PRYOG
SLO-5	DOHE- KABIRDAS	DOHE- BIHARI	KAVI PARICHAYA EVM KAVITA KA VISHLESHAN	VIGYAPAN KI VISHESHTAYEN	PRAKAR EVM MAHATVA
SLO-6	SANT PARICHAY	KAVI PARICHAYA	SURYAKANT TRIPATHI NIRALA- VAR DE VEENAVADINI VAR DE	VIGYAPAN KA MAHATVA	VYAKTIGAT PATRA
SLO-7	DOHE KA VISLESHAN	DOHE KA VISLESHAN	KAVI PARICHAYA EVM VISHLESHAN	VIGYAPAN KI BHASHA	AUPCHARIK PATRA
SLO-8	GURU KA MAHATVA	DOHE- GHANANAND	NAGARJUN-- AKAL AUR USKE BAD	VIGYAPAN AUR ROZGAR	PARIBHASHIK SHABDAVALI
SLO-9	DOHE- TULSHIDAS	SNEH KI SARLTA KA VARNAN	AKAL KA VASHTAVIK CHITRAN	PRINT EVM ELECTRONIC VIGYAPAN	SHABDAVALI KI AVSHYAKTA
SLO-10	DOHE KA VISLESHAN	PREM KA MAHATVA	KATTIS- BADRINARAYAN	VIGYAPAN KI VYAPAKTA	KARYALYIN SHABDAVALI
SLO-11	DAYA KA MAHATVA	GHANANAND KI KAVYA SHAILI KA MAHATVA	SAMBAND VICCHED KI PARICHARCHA	VIGYAPANLEKHAN KI KALA	EK DIN EK SHABD
SLO-12	RAM KI MAHIMA	DHOHA PARICHARCHA	KAVYA PARICHARCHA	UDDESHYA	HINDI SE ANGREJI AUR ANGREJI SE HINDI SHABD

Resources				
1	EDITED BOOK: ""SAMANYA HINDI", SRIJONLOK PUBLICATION, 2023, NEW DELHI.	4	BHAKTI ANDOLAN AUR SURDAS KA KAVYA – MANAGER PANDEY
2	KABIR – HAZARI PRASAD DWEDI	5	BIHARI – VISHVNATH PRASAD MISHR
3	SURDAS – RAM CHANDRA SHUKL	6	AADHUNIK VIGYAPAN AUR JANSAMPARK – TARESH BHATIA

Assessment

Bloom's Level of Thinking		Continuous Learning Assessment (CLA) (50% weightage)								Final Assessment (50 % weightage)
		CLA – 1		CLA – 2		CLA – 3		CLA – 4 *		
		(10 %)		(10 %)		(20 %)		(10%)		
		Theory (%)	Practice (%)	Theory (%)	Practice (%)	Theory (%)	Practice (%)	Theory (%)	Practice (%)	Theory (%)
1	Remember	15	15	15	15	10	10	10	10	15
2	Understand	15	15	15	15	10	10	10	10	15
3	Apply	20	25	25	20	25	25	25	25	25
4	Analyze	20	25	25	20	25	25	25	25	25
5	Evaluate	15	10	10	15	15	15	15	15	10
6	Create	15	10	10	15	15	15	15	15	10
	Total (%)	100	100	100	100	100	100	100	100	100

Strategies

Technology		Pedagogy / Andragogy		Sustainable Development	
Simulations		Clarification/Pauses	✓	Good Health & Well Being	✓
Presentation Tools	✓	Group Discussion	✓	Quality Education	✓
Learning Management System	✓	Hands-on Practice	✓	Gender Equality	✓
		Debate	✓		
		Interactive Lecture	✓		
		Brainstorming	✓		

* The evaluation can be done on one or more parameters that include, (i) Seminars, (ii) Mini-Project, (iii) Case-Studies, (iv) MOOC Certification, (v) Publication of Article, (vi) Presentation of Research Work in Conferences, (vii) Assignments

Designers

Professional Experts		Higher Institution Experts		Internal Experts	
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Course Code	ULF24AE2J	Course Title	French - II						Category	A	Ability Enhancement Course	L	T	P	C
												2	0	2	3

Course Offering Department	French	Pre-requisite Courses	Nil	Co-requisite Courses	Nil	Progressive Courses	Nil	Data Book / Codes/Standards	Nil

CLR	The purpose of learning this course is to:		Depth				Attainment			Programme Learning Outcomes										
			1	2	3	4	1	2	3	1	2	3	4	5	6	7	8	9	10
CLR-1	Strengthen the language of the students both in oral and written																		
CLR-2	Express their sentiments, emotions, and opinions, reacting to information, situations																		
CLR-3	Make them learn the basic rules of French Grammar.																		
CLR-4	Develop strategies of comprehension of texts of different origin																		
CLR-5	Enable the students to overcome the fear of speaking a foreign language and take position as a foreigner speaking French																		

CLO	At the end of this course, learners will be able to:	Conceive	Design	Implement	Operate	Bloom's Level of Thinking	Expected Proficiency (%)	Expected Attainment (%)	Problem Solving, Critical Thinking, Creativity Solving	Communication Skills, Collaborating Skills	Independent Thinking, Analytical Reasoning, Learning to Learn ,Research	Leadership Qualities, Professionalism, Autonomy, Accountability	Digital Technology Skills	Value Inculcation, Multicultural inclusivity	Environmental Action, Community Engagement	Entrepreneurial Risk Taking	PSO-1	PSO-2
CLO-1	To acquire knowledge about French language	✓	✓	-	-	2	85	75	3	2	3	-	-	2	-	-	-	-
CLO-2	To strengthen the knowledge on concept, culture, civilization, and translation of French	✓	✓	✓	-	2	85	75	3	-	2	-	3	-	3		-	-
CLO-3	To develop content using the features in French language	✓	✓	✓	✓	3	85	75	-	3	-	3	3	2	-	-	-	-
CLO-4	To interpret the French language into other language	✓	✓	✓	✓	3	85	75	2		2	3	-	-	2		-	-
CLO-5	To improve the communication, intercultural elements in French language	✓	✓	✓	✓	3	85	75		3		3	3	2				

Sessions	CLO - 1	CLO - 2	CLO - 3	CLO - 4	CLO - 5
	12	12	12	12	12
SLO-1	Temps libre	Le pronom indéfini on	Vendre	Il faut	Les gallicismes
SLO-2	Les loisirs	Les adjectifs interrogatifs	Acheter	Le verbe devoir	Les pronoms personnels COI
SLO-3	Les moments de la journée	Les prépositions avec les noms géographiques	Les aliments	Le verbe pouvoir	Le pronom Y
SLO-4	Les matières scolaires	Les verbes prendre et sortir	Les emballages	Le verbe vouloir	Des pronoms compléments
SLO-5	Les activités quotidiennes, Les quotidiennes	Les sons	Les quantités	Demander et dire le prix	Les nombres ordinaux
SLO-6	Le temps, L'heure	Parler de ses gouts	Les commerces	Faire des achats	Les verbes écrire et voir
SLO-7	La fréquence	Parler de ses préférences	Les commerçants	Les activités	Le E caduc ou instable

Bachelor's Programme, Regulations 2024

SLO-8	Les sons [u], Les sons [y]	Parler de sa routine	L'impératif	Les activités	Présenter ses vœux
SLO-9	L'heure, Quelle heure est-il ?	A la recherche d'un cadeau	Les articles partitifs	Mots et expressions	Présenter ses félicitations
SLO-10	Les pronoms personnels COD	Temps libre	Très ou beaucoup (de)	Communication	Répondre à une invitation
SLO-11	Les pronominaux, Se promener, se coucher etc…,	Mots et expressions	Le pronom en (la quantité)	Les sorties	Écrire un message amical
SLO-12	Les verbes du premier groupe, Parler, Demander, Poser	Grammaire– Communication	La phrase négative (2	Les fêtes	Parler au téléphone

Resources			
1	''La Nouvelle Génération-AI'' Méthode de français, Marie-Noëlle COCTON, P. DAUDA, L. GIACHINO, C. BARACCO, Les éditions Didier, Paris, 2018.	4	https://www.elearningfrench.com/learn-french-grammar-online-free.html
2	Cahier d'activités avec deux discs compacts.	5	https://www.lawlessfrench.com/grammar
3	https://www.fluentu.com/blog/french/french-grammar	6	https://blog.gymglish.com/2022/12/15/basic-french-grammar

Assessment											Strategies						
Bloom's Level of Thinking	**Continuous Learning Assessment (CLA) (50% weightage)**								**Final Assessment (50 % weightage)**		**Technology**		**Pedagogy / Andragogy**		**Sustainable Development**		
	CLA – 1		**CLA – 2**		**CLA – 3**		**CLA – 4 ***				Simulations		Clarification/Pauses	✓	Good Health & Well Being	✓	
	(10 %)		**(10 %)**		**(20 %)**		**(10%)**				Presentation Tools	✓	Group Discussion	✓	Quality Education	✓	
	Theory (%)	**Practice (%)**	**Theory (%)**	**Practice (%)**	**Theory (%)**	**Practice (%)**	**Theory (%)**	**Practice (%)**	**Theory (%)**		Learning Management System	✓	Hands-on Practice	✓	Gender Equality	✓	
1 Remember	15	15	15	15	10	10	10	10	15				Debate	✓			
2 Understand	15	15	15	15	10	10	10	10	15				Interactive Lecture	✓			
3 Apply	20	25	25	20	25	25	25	25	25				Brainstorming	✓			
4 Analyze	20	25	25	20	25	25	25	25	25								
5 Evaluate	15	10	10	15	15	15	15	15	10								
6 Create	15	10	10	15	15	15	15	15	10								
Total (%)	100	100	100	100	100	100	100	100	100								

* The evaluation can be done on one or more parameters that include, (i) Seminars, (ii) Mini-Project, (iii) Case-Studies, (iv) MOOC Certification, (v) Publication of Article, (vi) Presentation of Research Work in Conferences, (vii) Assignments

Designers			
Professional Experts		**Higher Institution Experts**	**Internal Experts**
1	Mr. Kavaskar Danasegarane, Language Specialist, Process Expert Maersk Global Service Center Pvt. Ltd Mailkavas18@gmail.com	1 Dr. C.Thirumurugan ,Professor, Department of French, Pondicherry University drcthirumurugan@gmail.com	1 Mr. Kumaravel K. Assistant Professor & Head, SRMIST,KTR., hod.french.ktr@srmist.edu.in
2	Mr. Shrivathsan S, Journalist, Senior Sports Reporter/Sub-Editor, Times of India, Chennai shrivathsangilramhanga@gmail.com		2 Miss. Abigail A, Assistant Professor , SRMIST,,VDP abigaila@srmist.edu.in
			3 Mrs.M.Mahalakshmi, Assistant Professor , SRMIST,,RMP mahalakm2@srmist.edu.in

Course Code	UDS24201J	Course Title	Elements of Distributed Data Processing		Category	C	Discipline Core Course	L T P C 3 0 3 4

Course Offering Department	Computer Applications	Pre-requisite Courses	Nil	Co-requisite Courses	Nil	Progressive Courses	Nil	Data Book / Codes/Standards	Nil

CLR	The purpose of learning this course is to:	Depth				Attainment			Programme Learning Outcomes									
CLR-1	Understand the concept to advanced computing in recent times	1	2	3	4	1	2	3	1	2	3	4	5	6	7	8	9	10
CLR-2	Learn the basics of cloud computing and cloud database																	
CLR-3	Understand the concept of MongoDB																	
CLR-4	Identify the concept to of Apache Spark																	
CLR-5	Impart the knowledge of distributed data processing with Scala																	

CLO	At the end of this course, learners will be able to:	Conceive	Design	Implement	Operate	Bloom's Level of Thinking	Expected Proficiency (%)	Expected Attainment (%)	Problem Solving, Critical Thinking, Creativity	Communication Skills, Collaborating Skills	Independent Thinking, Analytical Reasoning, Learning to Learn	Leadership Qualities, Professionalism, Autonomy,	Digital Technology Skills	Value Inculcation, Multicultural inclusivity	Environmental Action, Community Engagement	Entrepreneurial Risk Taking	PSO-1	PSO-2
CLO-1	Learn the basics of Traditional Computing, distributed file processing	✓	✓	-	-	2	85	75	3	-	-	1	2	-	-	2	2	2
CLO-2	Classify different types of Distributed file system, distributed databases	✓	✓	✓	-	2	85	75	3	2	1	2	2	-	-	1	2	3
CLO-3	Recognize Cloud computing and Architecture	✓	✓	✓	✓	3	85	75	3	1	3	1	3	-	-	1	1	3
CLO-4	Understand RMI, RPC, MongoDB, openMP and Scala Programming	✓	✓	✓	✓	3	85	75	3	3	2	3	3	-	-	2	3	3
CLO-5	Grasp the concept to of Google CloudPlatform	✓	✓	✓	✓	3	85	75	3	3	2	3	3	-	-	3	3	3

Sessions	CLO - 1 Introduction to Distributed Systems 18	CLO - 2 Distributed database Management 18	CLO - 3 Query Processing 18	CLO - 4 MongoDB & Introduction to HDFS 18	CLO - 5 Distributed Algorithms 18
SLO-1	Introduction to Distributed Systems, Characterization of Distributed Systems	Distributed database Management System, Functions of distributed data base system	Query Processing, Query Processing Problem	SQL to MongoDB Mapping, How to optimize query performance	Distributed Algorithms, Introduction to distributed computing models
SLO-2	DS issues and Goals, Types of distributed systems, Distributed File system	Distributed databases - Homogeneous and Heterogeneous Databases, Distributed Data storage	Layers of Query Processing, Query Processing in Centralized Systems	Benefits of MongoDB query, MongoDB projection and Embedding	Asynchronous message passing model, Time and message complexity

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SLO-3	Design and implementation of distributed file systems, Features of DFS	Why Distributed storage is important? Distributed cloud storage – Features of distributed cloud storage	Tutorial: Parsing, Translation	Tutorial: Distributed operating systems, Shell commands to manage HDFS	Tutorial: Clock synchronization, Message Ordering and Group communication
SLO 4-6	**Lab 1: Write a program to implement Remote Method Invocation**	**Lab 4: Virtualization in Cloud by using KVM and VMware**	**Lab 8 : Creation of Queries in MongoDB**	**Lab 11: Example programs-Hadoop Streaming**	**Practice: Lab 14: Writing spark applications**
SLO-7	File Models, File accessing models	Distributed Transactions, How distributed transactions work	Optimization, Code generation	Different types of distributed operating Systems, Features of distributed operating system	Simple programs using Scala, Termination Detection Algorithm and Reasoning with Knowledge
SLO-8	File caching schemes, File Replication	Essential properties of distributed transactions (ACID), Commit protocols - Distributed one phase commit Distributed two phase commit	Example Query Processing in Distributed Systems, Mapping global query to local Optimization of Distributed	Examples of distributed OS, Advantages and Disadvantages of distributed OS	OpenMP programming, Getting Started with Memory Programming
SLO-9	Network file System, Andrew file System	Tutorial: Objectives of Concurrency control in Distributed Databases Concurrency Control anomalies, Methods of concurrency control Serializability and recoverability	Queries, Centralized Query Optimization	Design and implementation of distributed operating system, Hadoop Distributed system	Tutorial: Fundamentals of Shared Memory Programming, Basic OpenMP Conecpts
SLO 10-12	**Lab 2: Write a Program to implement Remote Procedure Call**	**Lab 5: Mongodb Atlas – Installation Lab 6: MongoDB CRUD operations**	**Lab 9: Write a program to sort a single field in Mongodb**	**Lab 12: Writing a Hadoop MapReduce program in python**	**Lab15: Write a MPI Program to send data across all processes Perform a Simple Vector Addition using OpenMP Programming**
SLO-13	Working and Architecture of Cluster Computing and Grid Computing, Architecture of Cloud Computing	Distributed Serializability, Enhanced lock based and timestamp based protocols, Heterogeneous distributed databases	Data localization, Fragmented query ordering	Introduction to HDFS and its features, Apache Hadoop HDFS architecture	Parallel Directive, Data Scoping Rules
SLO-14	Types of Cloud Application Development Infrastructure-as-a-service, Platform-as-a-service, Benefits of Software-as-a-service	Cloud based databases Why use a cloud- database, Types of cloud-based database, Advantages of cloud based databases	Update Document in Mongodb, Bulk write operations in MongoDB	Cluster in Hadoop- MapReduce, Import /Export Data between HDFS and RDBMS Apache Spark	Basic OpenMP Constructs, OpenMP Directives, OpenMP Calls Parallelizing an Existing Code with OpenMP
SLO-15	What is DDMS, Advantages and isadvantages of DDBS	Replication in MongoDB Indexing in MongoDB, Distributed Query Optimization Algorithm	Delete documents in MongoDB, HDFS Commands-Hadoop	Kafka Stream, Apache Spark : spark SQL-spark RDD-MLlib, MLflow, structured streaming	Message Passing Interface (MPI) parallel programming - Introduction to Message Passing Interface, Message Passing Model
SLO 16-18	**Lab 3: Case study: PaaS (FaceBook, GoogleAppEngine)**	**Lab 7: Data modeling in MongoDB**	**Lab 10: Hadoop installation – Setting up a Single Node**	**Lab 13: Create an Application using Apache Spark. (Ex.: Similarity word count during searching)**	**Practice: Lab16: Create a Simple Virtual Machine on Google Compute Service**

Resources

1	AndrewS.Tanenbaum, Maarten Van Steen,"Distributed Systems–Principles andParadigms",SecondEdition,Pearson,2006.	2	Buyya R.,BrobergJ., GoscinskiA.,"CloudComputing:PrinciplesandParadigm", JohnWiley&Sons,2011.

Assessment

	Bloom's Level of Thinking	Continuous Learning Assessment (CLA) (50% weightage)								Final Assessment (50 % weightage)	
		CLA – 1		CLA – 2		CLA – 3		CLA – 4 *			
		(10 %)		(10 %)		(20 %)		(10%)			
		Theory (%)	Practice (%)	Theory (%)	Practice (%)	Theory (%)	Practice (%)	Theory (%)	Practice (%)	Theory (%)	Practice (%)
1	Remember	15	15	15	15	10	10	10	10	15	15
2	Understand	15	15	15	15	10	10	10	10	15	15
3	Apply	20	25	25	20	25	25	25	25	25	25
4	Analyze	20	25	25	20	25	25	25	25	25	25
5	Evaluate	15	10	10	15	15	15	15	15	10	10
6	Create	15	10	10	15	15	15	15	15	10	10
	Total (%)	100	100	100	100	100	100	100	100	100	100

Strategies

Technology		Pedagogy / Andragogy		Sustainable Development	
Simulations		Clarification/Pauses	✓	Good Health & Well Being	✓
Presentation Tools	✓	Group Discussion	✓	Quality Education	✓
Learning Management System	✓	Hands-on Practice	✓	Gender Equality	✓
		Debate	✓		
		Interactive Lecture	✓		
		Brainstorming	✓		

* The evaluation can be done on one or more parameters that include, (i) Seminars, (ii) Mini-Project, (iii) Case-Studies, (iv) MOOC Certification, (v) Publication of Article, (vi) Presentation of Research Work in Conferences, (vii) Assignments

Designers		
Professional Experts	**Higher Institution Experts**	**Internal Experts**
1 Mr.Jothi Periaswamy, Founder/Chief Data Scientist, DeepSphere AI, 2 Venture Drive, #13-26 Vision Exchange, Singapore, 608526	1 Dr.S.Gopinathan, Professor and Head, Department of Computer Science, University of Madras, Guindy Campus,,Chennai-600025	1 Dr.S.Lakshmi, SRMIST, KTR Campus

Course Code	UDS24202J	Course Title			Data Structures and Algorithms				Category	C	Discipline Core Course	L 3	T 0	P 3	C 4

Course Offering Department	Computer Applications	Pre-requisite Courses	Nil	Co-requisite Courses	Nil	Progressive Courses	Nil	Data Book / Codes/Standards	Nil

CLR	The purpose of learning this course is to:
CLR-1	Utilize the different data types
CLR-2	Utilize linked list in developing applications
CLR-3	Utilize stack and queues in processing data for real-time applications
CLR-4	Utilize tree data storage structure for real-time applications
CLR-5	Utilize algorithms to find shortest data searching graphs for real-time application development

CLO	At the end of this course, learners will be able to:	Depth				Attainment			Programme Learning Outcomes										
		Conceive	Design	Implement	Operate	Bloom's Level of Thinking	Expected Proficiency (%)	Expected Attainment (%)	Problem Solving, Critical Thinking, Creativity	Communication Skills, Collaborating Skills	Independent Thinking, Analytical Reasoning, Learning to Learn, Research Skills	Leadership Qualities, Professionalism, Autonomy, Accountability	Digital Technology Skills	Value Inculcation, Multicultural inclusivity	Environmental Action, Community Engagement	Entrepreneurial Risk Taking	PSO-1	PSO-2
CLO-1	Identify linear and non-linear data structures. Create algorithms for searching and sorting	✓	✓	-	-	2	85	75	3	1	2	2	1	-	-	2	2	1
CLO-2	Create the different types of linked lists and evaluate its operations	✓	✓	✓	-	2	85	75	3	2	1	3	2	-	-	1	2	1
CLO-3	Construct stack and queue data structures and evaluate its operations	✓	✓	✓	✓	3	85	75	3	1	3	2	3	-	-	1	3	2
CLO-4	Create tree data structures and evaluate its types and operations	✓	✓	✓	✓	3	85	75	3	3	3	3	3	-	-	2	3	3
CLO-5	Create graph data structure, evaluate its operations, implement algorithms to identify shortest path	✓	✓	✓	✓	3	85	75	3	3	3	3	3	-	-	3	3	3

Sessions	CLO - 1 Introduction to Data Structures 18	CLO - 2 Stack, Queues 18	CLO - 3 Tree Traversals 18	CLO - 4 Sorting 18	CLO - 5 Graphs 18
SLO-1	Introduction to theory of Data structures, Data representation	Introduction to stack, Representation of stack through array	Tree Traversals –In order, preorder, Tree Traversals - Post order	Introduction to sorting, Different types of sorting	Graph Terminology, Representation of graph–Arrays
SLO-2	Abstract Data type, Classification of data types	Representation of Stack through linked list, Operations on stack	Binary Search Tree, Threaded Binary Search Tree	Bubble sort, Example	Representation of graph– Linked list, Graph Traversal –BFS, Example
SLO-3	Asymptotic Notation, Algorithm Analysis – Recursion - Example	Disadvantages of Stack, Polish Notations, Applications –Evaluation of Expression - Infix to Postfix expression – Towers of Hanoi, Recursion	Binary Search Tree: Construction, Binary Search Tree: Insertion – Binary Search Tree: Searching – Binary Search Tree: Searching	Insertion Sort – Example, Quicksort - Example	Graph Traversal–DFS – Example - Topological Sorting
SLO 4-6	Lab 1: Recursion	Lab 4: Stack and its Applications	Lab 7: TreeTraversals	Lab 10: Implementation of Bubble and Insertion sort	Lab 13: Implementation of shortest path algorithm
SLO-7	Introduction to Data structures, Data Structures and its uses	Queue, Representation of Queue using Arrays And Linked list	Applications of trees, Applications of BST	Selection sort, Example	Shortest Path Algorithm-Introduction, Shortest Path Algorithm: Dijkstra
SLO-8	Linear and Non Linear Data Structures, Operations on data structure	Operations on Queue, Circular Queue	Expression trees, Example	Merge sort, Example	Applications of Graph, Minimum spanning tree
SLO-9	Array types, Array operations – Applications of arrays - Dynamic memory allocation	Double ended Queue, Priority Queue- Reversing a Queue using another queue – Applications of Queue	AVLTree, AVLTree Rotations - Applications of AVL tree	Radix sort, Heap Sort Example Comparison of sorts	Prims, Example
SLO 10-12	Lab 2: Arrays	Lab 5: Queue implementation using array and pointers	Lab 8: Implementation of BST Heap Data Structure	Lab 11: Implementation of Quick sort and Merge sort	Lab 14: Implementation of minimum Spanning tree
SLO-13	Introduction to lists, Linked list operations	Introduction to non-linear data Structures, TreeADT and Terminologies	Minimum Heap Construction, Example	Introduction to searching, Linear Search, Binary Search	Kruskals –Example, Algorithm Design And Analysis
SLO-14	Types of Linked Lists, Linked list vs. Arrays - Application of linked list	Tree Terminologies, Tree Representation - Tree Types and Operations	Minimum Heap Deletion Construction, Maximum Heap Construction	Comparison of different search, Define Hashing – Hash functions	Greedy Algorithms, Example
SLO-15	Performance Analysis and Measurement of algorithm, Efficiency of algorithm - Time	Binary Tree Representation, Properties of binary tree	Maximum Heap Deletion Construction, Applications of Heaps and AVLtrees	Hashing: Collision avoidance Hashing: Separate chaining, Open addressing, Advantages of Hashing	Divide And Conquer – Example, Backtracking - Example

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	complexity and space Complexity			
SLO 16-18	Lab 3: Linked List	Lab 6: Implementation of binary tree using Arrays	Lab 9: Heap Implementation	Lab 12: Implementation of Graph using Array	Lab 15: Implementation of binary search using divide and conquer strategy

Resources

1	SeymourLipschutz,(2014),"Data Structures with C",McGraw Hill Education,Special Indian Edition	2	SRD Group,(2013),"Data structures using C",McGraw Hill,2nd Edition,
3	R.F.Gilberg,B.A.Forouzan,(2005),"Data Structures",ThomsonIndi,2nd Edition,	4	A.V.Aho,J.EHopcroft,J.D.Ullman,(2003),"Data structures and Algorithms",1st Edition,Pearson Education
5	Mark Allen Weiss,"Data Structures and Algorithm Analysis in C",2nd Edition, Pearson Education	6	Reema Thareja,(2011),"Data Structures Using C",1st Edition, Oxford Higher Education

Assessment

Bloom's Level of Thinking		Continuous Learning Assessment (CLA) (50% weightage)								Final Assessment (50 % weightage)	
		CLA – 1		CLA – 2		CLA – 3		CLA – 4 *			
		(10 %)		(10 %)		(20 %)		(10%)			
		Theory (%)	Practice (%)	Theory (%)	Practice (%)	Theory (%)	Practice (%)	Theory (%)	Practice (%)	Theory (%)	Practice (%)
1	Remember	15	15	15	15	10	10	10	10	15	15
2	Understand	15	15	15	15	10	10	10	10	15	15
3	Apply	20	25	25	20	25	25	25	25	25	25
4	Analyze	20	25	25	20	25	25	25	25	25	25
5	Evaluate	15	10	10	15	15	15	15	15	10	10
6	Create	15	10	10	15	15	15	15	15	10	10
	Total (%)	100	100	100	100	100	100	100	100	100	100

Strategies

Technology		Pedagogy / Andragogy		Sustainable Development	
Simulations		Clarification/Pauses	✓	Good Health & Well Being	✓
Presentation Tools	✓	Group Discussion	✓	Quality Education	✓
Learning Management System	✓	Hands-on Practice	✓	Gender Equality	✓
		Debate	✓		
		Interactive Lecture	✓		
		Brainstorming	✓		

* The evaluation can be done on one or more parameters that include, (i) Seminars, (ii) Mini-Project, (iii) Case-Studies, (iv) MOOC Certification, (v) Publication of Article, (vi) Presentation of Research Work in Conferences, (vii) Assignments

Course Designers					
Professional Experts		**Higher Institution Experts**		**Internal Experts**	
1	Mr.Jothi Periaswamy, Founder/Chief Data Scientist, DeepSphere AI, 2 Venture Drive, #13-26 Vision Exchange, Singapore, 608526	1	Dr.S.Gopinathan, Professor and Head, Department of Computer Science, University of Madras, Guindy Campus,,Chennai-600025	1	Dr.S.Arunarani, SRMIST, KTR Campus

Course Code	UMS24203T	Course Title	Statistics for Artificial Intelligence		Category	C	Discipline Core Course	L	T	P	C
								4	0	0	4

Course Offering Department	Mathematics and Statistics	Pre-requisite Courses	Nil	Co-requisite Courses	Nil	Progressive Courses	Nil	Data Book / Codes/Standards	Nil

CLR	The purpose of taking this course is to:	Depth				Attainment			Programme Learning Outcomes										
		1	2	3	4	1	2	3	1	2	3	4	5	6	7	8	9	10	
CLR-1	To provide foundations in Statistics																		
CLR-2	To provide a strong foundation of organizing the data, diagrammatic and graphical presentation.																		
CLR-3	To apply Statistical techniques in AI																		
CLR-4	To provide the application of correlation and regression in AI.																		
CLR-5	To analyze the sample data in order to estimate or predict characteristics of the larger population from which the sample is drawn.																		

CLO	At the end of this course, learners will be able to:	Conceive	Design	Implement	Operate	Bloom's Level of Thinking	Expected Proficiency (%)	Expected Attainment (%)	Problem Solving, Critical Thinking, Creativity	Communication Skills, Collaborating Skills	Independent Thinking, Analytical Reasoning, Learning to Learn, Research Skills	Leadership Qualities, Professionalism, Autonomy, Accountability	Digital Technology Skills	Value Inculcation, Multicultural inclusivity	Environmental Action, Community Engagement	Entrepreneurial Risk Taking	PSO-1	PSO-2
CLO-1	To understand the statistical modeling and its limitations, and have skill in description, interpretation and exploratory analysis of data by graphical and other means	✓	✓	-	-	2	85	75	3	-	-	-	-	-	-	-	-	-
CLO-2	To calculate and apply measures of central tendency - grouped and ungrouped data cases.	✓	✓	✓	-	2	85	75	-	3	-	-	-	-	-	-	-	-
CLO-3	To understand and apply measures of dispersion - grouped and ungrouped data cases.	✓	✓	✓	✓	3	85	75	3		-	-	-	-	-	-	-	-
CLO-4	Find the relationship between two or more variables using correlation and regression.	✓	✓	✓	✓	3	85	75	-	3	-	-	-	-	-	-	-	-
CLO-5	Perform Test of Hypothesis for small sample. Learn non-parametric test such as the Chi- Square test for Independence and Goodness of Fit, Perform the Analysis of Variance - One way Classifications.	✓	✓	✓	✓	3	85	75	-	-	-	-	3	-	-	-	-	-

Sessions	CLO - 1 Nature and scope of statistical methods 12	CLO - 2 Measures of Central tendency 12	CLO - 3 Measures of Dispersion 12	CLO - 4 Correlation Analysis 12	CLO - 5 Conditional Probability, Testing of Hypotheses 12
SLO-1	Definition of statistics, Numerical Data, Nature and Importance of statistics, Functions of statistics	Measures of Central tendency i. Definition ii. Functions of average iii. Characteristics of a typical average Arithmetic mean, Individual series	Range – Individual, Discrete series and Continuous series	Correlation - Definition and uses, Types of correlation, Methods for Finding Correlation Coefficient, Properties of correlation coefficient	Random experiment, types of events with Examples, Definition of probability, addition and multiplication law
SLO-2	Limitations, Distrust of Statistics, Classification: Meanings, Objects	Arithmetic mean Discrete series, Arithmetic mean Continuous series	Quartile Deviation - Individual and Discrete series	Karl Pearson's Correlation Co-efficient	Problems based on addition and multiplication law, Conditional probability - formula
SLO-3	Rules of classification, Types of classification, Characteristics of good classification- Tabulation: Parts of Tabulation, Rules of Tabulation, Types of tables - Objective of Tabulation	Arithmetic mean Cumulative series	Quartile Deviation - Continuous series	Spearman's Rank Correlation, Coefficient with non-repeated Ranks	Problems on conditional probability, Definition of Baye's theorem
SLO-4	Components of Good Table, Rules of construction of the table	Arithmetic mean Merits and Demerits, Median Individual series, Median Discrete series,	Mean Deviation about Mean – Individual Series, Mean Deviation about Mean – Discrete series, Mean Deviation about Mean – Continuous series	Spearman's Rank Correlation, Coefficient with repeated Ranks	Problems on Baye's theorem, Definition of probability distribution and its Type- Testing of Hypotheses
SLO-5	Difference between classification and tabulation.	Median Continuous series- Median Merits and Demerits	Mean Deviation about Median – Individual series, Mean Deviation about Median – Discrete series, Mean Deviation about Median – Continuous series	Spearman's Rank Correlation Co-efficient, Problems on finding the best pair of judgements- Bivariate Distribution	Testing Procedures Definition of test statistic t and its uses, t-test Small Sample tests, t-test - Test for Single Mean, t-test -Test for two Sample Means
SLO-6	Diagrammatic representation of various types of statistical data : Bar Diagram, Types of Bar diagram	Mode Individual series, Mode Discrete Series	Standard Deviation – Individual and Discrete Series	Regression Analysis:Regression - Definition and Uses, Regression Coefficients	t-test - t Test Statistic, when sample standard deviations are not known, but Population Standard Deviations are known
SLO-7	One dimensional Diagrams, Two dimensional Diagrams	Mode Continuous Series	Standard Deviation - Continuous Series	Regression Equations, Types of Regression Equations	Chi-Square distribution - Definition and its Uses, Chi-Square test - Testing Procedure

SLO-8	Pie chart, Histogram, Frequency Polygon, Frequency Curve	Mode Continuous Series	Coefficient of Variation,	Regression Equation of X on Y and Regression Equation of Y on X	Chi-Square test - Problems
SLO-9	Less than O gives, more than O gives	Mode Merits and Demerits, Empirical Relation	Graphical solution of Dispersion Lorenz curve-	Relationship between Correlation and Regression Coefficients,	F-test - Test Statistic of F-test, Uses and testing Procedures
SLO-10	Less than O gives, more than O gives	Graphical solution of Median	Skewness Bowley's coefficient of Skewness	Relationship between Correlation and Regression Coefficients,	Testing the equality of variance using F distribution- Problems based on F-test
SLO-11	Lorenz Curve	Graphical solution of Mode	Skewness Bowley's coefficient of Skewness	Problems on the Relationship between the Coefficients	Analysis of Variance – Definition and Uses
SLO-12	Lorenz Curve	Graphical solution of Mode	Concept of Kurtosis	Finding the corrected Correlation Coefficient values by correcting the wrongly entered inputs	Analysis of Variance – testing procedure, ANOVA - One Way Classification

Resources			
1	Pillai, R.S.N, Bagavathi, V. (2009), Statistics,Theory and Practice,7thEdition,S.ChandLtd,NewDelhi.	3	Gupta, S.P. (2012), Statistical Methods, 4th Edition, Sultan Chand & Sons, New Delhi.
2	Khan and Khanum, (2008), Fundamentals of Bio Statistics, 3rd Edition, Ukaaz Publications, Hyderabad	4	Ken Black, (2013), Business Statistics for Contemporary Decision Making, 7th Edition, John Wiley Publications

Assessment

Bloom's Level of Thinking		Continuous Learning Assessment (CLA) (50% weightage)				Final Assessment (50 % weightage)
		CLA – 1	CLA – 2	CLA – 3	CLA – 4 *	
		(10 %)	(10 %)	(20 %)	(10%)	
		Theory (%)	Theory (%)	Theory (%)	Theory (%)	Theory (%)
1	Remember	15	15	10	10	15
2	Understand	15	15	10	10	15
3	Apply	20	25	25	25	25
4	Analyze	20	25	25	25	25
5	Evaluate	15	10	15	15	10
6	Create	15	10	15	15	10
	Total (%)	100	100	100	100	100

Strategies

Technology		Pedagogy / Andragogy		Sustainable Development	
Simulations		Clarification/Pauses	✓	Good Health & Well Being	✓
Presentation Tools	✓	Group Discussion	✓	Quality Education	✓
Learning Management System	✓	Hands-on Practice	✓	Gender Equality	✓
		Debate	✓		
		Interactive Lecture	✓		
		Brainstorming	✓		

* The evaluation can be done on one or more parameters that include, (i) Seminars, (ii) Mini-Project, (iii) Case-Studies, (iv) MOOC Certification, (v) Publication of Article, (vi) Presentation of Research Work in Conferences, (vii) Assignments

Designers

Professional Experts		Higher Institution Experts		Internal Experts	
1	Dr. N.Viswanathan, Presidency College, Chennai	1	Dr. M.Vasantha, ICMR,Chennai	1	Dr.S.Parvathi, SRM IST
				2	Dr.S. Poongodisathya, SRM IST

Course Code	UCD24V01T	Course Title	Essentials of Artificial Intelligence	Category	V	Value Added Course	L 1	T 0	P 0	C 1

Course Offering Department	Computer Applications	Pre-requisite Courses	Nil	Co-requisite Courses	Nil	Progressive Courses	Nil	Data Book / Codes/Standards	Nil

CLR	The purpose of learning this course is to:	Depth				Attainment			Programme Learning Outcomes									
		1	2	3	4	1	2	3	1	2	3	4	5	6	7	8	9	10
CLR-1	Study the basics of designing intelligent agents that can solve general purpose problems'																	
CLR-2	Discover appropriate AI methods to solve a given problem																	
CLR-3	Perform intellectual task as decision making, problem solving, perception, understanding																	
CLR-4	Formalize a given problem using different AI methods																	
CLR-5	Provides adaptive learning																	

CLO	At the end of this course, learners will be able to:	Conceive	Design	Implement	Operate	Bloom's Level of Thinking	Expected Proficiency (%)	Expected Attainment (%)	Problem Solving, Critical Thinking, Creativity	Communication Skills, Collaborating Skills	Independent Thinking, Analytical Reasoning, Learning to Learn Research Skills	Leadership Qualities, Professionalism, Autonomy, Accountability	Digital Technology Skills	Value Inculcation, Multicultural inclusivity	Environmental Action, Community Engagement	Entrepreneurial Risk Taking	PSO-1	PSO-2
CLO-1	Demonstrate fundamental understanding of the history of artificial intelligence and its foundations	✓	✓	-	-	2	85	75	3	-	-	1	2	1	-	-	-	1
CLO-2	Apply basic principles of AI in solutions that require problem solving, inference, perception, knowledge representation, and learning	✓	✓	✓	-	2	85	75	2	-	1	-	2	2	-	1	-	1
CLO-3	Identify systems with Artificial Intelligence. evaluation of different algorithms on a problem formalization	✓	✓	✓	✓	3	85	75	2	2	2	-	2	1	-	1	-	2
CLO-4	Use classical Artificial Intelligence techniques, such as search algorithms	✓	✓	✓	✓	3	85	75	3	-	2	-	2	2	-	2	-	-
CLO-5	Ability to apply Artificial Intelligence techniques for problem solving.	✓	✓	✓	✓	3	85	75	2	2	-	-	2	-	-	-	-	-

Sessions	CLO - 1 Introduction to Artificial Intelligence	CLO - 2 Logical Reasoning and First order logic	CLO - 3 Unification and State Space Search	CLO - 4 Planning Graphs	CLO - 5 Probability Theory and Temporal Models
	3	3	3	3	3
SLO-1	Introduction to Artificial Intelligence, History of Artificial Intelligence- AI models,	Logical Reasoning-Introduction-Knowledge Representation	Unification and Conditions, Unification algorithm	Partial-order planning, planning graphs	Probability Theory, Uncertain Knowledge, Axioms of probability.
SLO-2	Problem Solving with Artificial Intelligence- ProblemSolving Process	Logical Agents, Knowledge basedAgents, Syntax of First order logic, Basic elements of First order logic	Planning: designing programs to search for data or solutions to problem.	Uses of planning graph, Planning and acting in the realworld	Bayes Theorem, Bayes' Rules & uses, Bayesian networks, Types of Bayesian Network
SLO-3	Problem Types, Characteristics and Representation-Agents- Examples of Agents, Types of agents	Forward chaining andBackward Chaining- Properties Examples	State-space search, Problems to solve: Water Jug Problem, State representation: Initial, operator, goal state	Forward march, Backward march and Limited resources	Temporal models, Hidden Markov models, HMM components

Resources	
1 Russel.SandNorvig.P, (2003), "Artificial Intelligence – A Modern Approach", Second Edition, Pearson Education	2 S. Russel and P. Norvig, "Artificial Intelligence – A Modern Approach", Second Edition, Pearson Education

Assessment					
Bloom's Level of Thinking	**Continuous Learning Assessment (CLA) (100% weightage)**				
	CLA – 1	**CLA – 2**	**CLA – 3**	**CLA – 4 ***	
	(20 %)	**(20 %)**	**(40%)**	**(20%)**	
	Theory (%)	**Theory (%)**	**Theory (%)**	**Theory (%)**	
1 **Remember**	15	15	10	10	
2 **Understand**	15	15	10	10	
3 **Apply**	20	25	25	25	
4 **Analyze**	20	25	25	25	
5 **Evaluate**	15	10	15	15	
6 **Create**	15	10	15	15	
Total (%)	100	100	100	100	

Strategies					
Technology		**Pedagogy / Andragogy**		**Sustainable Development**	
Simulations		Clarification/Pauses	✓	Good Health & Well Being	✓
Presentation Tools	✓	Group Discussion	✓	Quality Education	✓
Learning Management System	✓	Hands-on Practice	✓	Gender Equality	✓
		Debate	✓		
		Interactive Lecture	✓		
		Brainstorming	✓		

* The evaluation can be done on one or more parameters that include, (i) Seminars, (ii) Mini-Project, (iii) Case-Studies, (iv) MOOC Certification, (v) Publication of Article, (vi) Presentation of Research Work in Conferences, (vii) Assignments

Designers		
Professional Experts	**Higher Institution Experts**	**Internal Experts**
1 Mr.Jothi Periaswamy, Founder/Chief Data Scientist, DeepSphere AI, 2 Venture Drive, #13-26 Vision Exchange, Singapore, 608526	1 Dr.S.Gopinathan, Professor and Head, Department of Computer Science, University of Madras, Guindy Campus,,Chennai-600025	1 Dr.S.Belina V J Sara, SRMIST KTR Campus

Course Code	UDS24M01J	Course Title	Internet of Things		Category	M	Multidisciplinary Course	L	T	P	C
								2	0	2	3

Course Offering Department	Computer Applications	Pre-requisite Courses	Nil	Co-requisite Courses	Nil	Progressive Courses	Nil	Data Book / Codes/Standards	Nil

CLR	The purpose of learning this course is to:	Depth				Attainment			Programme Learning Outcomes									
CLR-1	Demonstrate the design, communication model and enabling technologies for IoT.	1	2	3	4	1	2	3	1	2	3	4	5	6	7	8	9	10
CLR-2	Explore the system management and domain for various applications of IoT																	
CLR-3	Categorize the various protocols that are used for developing IoT applications.																	
CLR-4	Deploy an IoT application and connect to the cloud.																	
CLR-5	Develop IoT application for real time scenario.																	

CLO	At the end of this course, learners will be able to:	Conceive	Design	Implement	Operate	Bloom's Level of Thinking	Expected Proficiency (%)	Expected Attainment (%)	Problem Solving, Critical Thinking, Creativity	Communication Skills, Collaborating Skills	Independent Thinking, Analytical Reasoning, Learning to Learn, Research	Leadership Qualities, Professionalism, Autonomy, Accountability	Digital Technology Skills	Value Inculcation, Multicultural inclusivity	Environmental Action, Community Engagement	Entrepreneurial Risk Taking	PSO-1	PSO-2
CLO-1	Apply the knowledge/understanding of mathematics, science, to the solution of complex problems applicable to the discipline.	✓	✓	-	-	2	85	75	3	-	1	1	2	-	-	2	2	1
CLO-2	Design, implement, and evaluate a computer-based system, process, component, or program to meet desired solutions that meet the specified needs with suitable concern for the public health and safety, and the cultural, societal, and environmental considerations.	✓	✓	✓	-	2	85	75	3	2	1	2	2	-	-	1	2	1
CLO-3	Create, select, and apply applicable techniques, resources, and modern engineering and IT tools to complex engineering activities with an understanding of the limitations.	✓	✓	✓	✓	3	85	75	3	1	3	1	3	-	-	1	3	2
CLO-4	Function successfully as an individual, and as a member or leader in assorted teams, and in multidisciplinary settings.	✓	✓	✓	✓	3	85	75	3	3	2	3	3	-	-	2	3	3
CLO-5	Prove knowledge and understanding of the engineering and management principles and apply the same to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.	✓	✓	✓	✓	3	85	75	3	3	2	3	3	-	-	3	3	3

Sessions	CLO - 1	CLO - 2	CLO - 3	CLO - 4	CLO - 5
	Introduction	Communication Models & Architecture	Model Specification	Raspberry Pi	Amazon Web services
	12	12	12	12	12
SLO-1	Introduction, Types, Applications, Merits, Definition& Characteristics of IoT, Physical design of IoT, Things in IoT.	Communication Models in IoT, Device to Device Model, Device to Cloud Model	IoT Platforms Design Methodology, Purpose & Requirements, Model specification- process, domain, Information, service, IoT level specifications	IoT Platforms, IoT Logical Design with Python, Python Data types and Data Structures	Introduction about RESTful API, Designing a RESTful Web API, Amazon Web Services
SLO-2	IoT protocols, logical Design of IoT, IoT Functional Blocks	Device to Gateway Model, M2M, Differences between IoT and M2M	View specifications - Functional, Operational. Device & component Integration, Application development.	Control Flow statements, Classes and Python Packages for IoT, JSON, XML	Amazon Web Services for IoT, Creating an ID in Amazon, Implementation of EC2.
SLO-3&4	**Lab 1: Explain working of Raspberry Pi.**	**Lab 4: Demonstrate a smart object API gateway service reference implementation in IoT toolkit.**	**Lab 7: Explain application framework and embedded software agents for IoT toolkit.**	**Lab 10: Reading Data from Internet using sensor.**	**Lab 13: Smart Irrigation System**
SLO-5	IoT Levels and Deployment Templates- Levels 0 to 5.	Architecture of M2M,Software-Defined Networking (SDN)	IoT System for Weather Monitoring: Purpose & Requirements, Model specification- process, domain, Information, service, IoT level specifications	HTTP Lib, URL Lib, SMTP Lib, Introduction to IoT Physical Devices	Implementation of Auto scaling, S3, RDS.
SLO-6	IoT Deployment Challenges, Domain Specific IoT.	Architecture of SDN, Network Function Virtualization (NFV), Architecture of NFV	View specifications- Functional, Operational. Device & component Integration, Application development.	Basic Building Blocks of IoT device, Example Device: Raspberry Pi, About the board.	Dynamo DB, Implementation of Dynamo DB, Kinesis
SLO-7&8	**Lab 2: Controlling LED with Raspberry Pi.**	**Lab 5: Write and explain working of an HTTP- to-CoAP semantic mapping proxy in IoT toolkit.**	**Lab 8: Arduino with ESP8266 explanation**	**Lab 11: Home Automation**	**Lab 14: Health care system**
SLO-9	Home, Cities, Environment, Energy systems, Industry	NFV for IOT, IoT System Management, Advantages and Disadvantages of IoT system management	IoT System for Agriculture, View specifications- Functional, Operational. Introduction to Cloud Storage Models, Stages of IoT Architecture.	Raspberry Pi Interfaces &SPI Serial, Introduction to Arduino, IoT hardware	Implementation of Kinesis, Case studies – Environment, IoT systems for weather Reporting Bot.
SLO-10	Agriculture, Health and Lifestyle, IoT components	Need for IoT Systems Management, NETCONF, YANG and NETOPEER, IoT Systems and	Sensors/Actuators, Devices, Gateway and Cloud, IoT Security	Microprocessors & Microcontrollers, Resistive Sensors, Capacitive	Renewable Energy Systems, Forest Fire Detection & Smart grid, Case studies - IoT system for Energy

		Device Management with NETCONF-YANG.	and Interoperability, Risks and Attacks & Tools for Security.	Sensors, Inductive Sensors, Electromagnetic Sensors	
SLO-11&12	**Lab 3: Interfacing Light Sensor with Raspberry pi.**	**Lab 6: Describe gateway as a service deployment in IoT toolkit.**	**Lab 9: Weather Monitoring System.**	**Lab 12: Remote Surveillance System.**	**Lab 15: Air Pollution Monitoring System.**

Resources

1	ArshdeepBahga and Vijay Madisetti, "Internet of Things - A Hands-on Approach", Universities Press, 2015.	2	Dieter Uckelmann et.al, "Architecting the Internet of Things", Springer, 2011.
3	CunoPfister, "Getting Started with the Internet of Things", O'Reilly, 2011.	4	Adrian McEwen, Hakim Cassimally, "Designing the Internet of Things", Wiley, 2014.
5	HonboZhou, "The Internet of Things in the Cloud: A Middleware Perspective ", CRC Press, 2012.		

Assessment

	Bloom's Level of Thinking	Continuous Learning Assessment (CLA) (50% weightage)								Final Assessment (50 % weightage)	
		CLA – 1		CLA – 2		CLA – 3		CLA – 4 *			
		(20 %)		(20 %)		(30%)		(30%)			
		Theory (%)	Practice (%)	Theory (%)	Practice (%)	Theory (%)	Practice (%)	Theory (%)	Practice (%)	Theory (%)	Practice (%)
1	Remember	15	15	15	15	10	10	10	10	15	15
2	Understand	15	15	15	15	10	10	10	10	15	15
3	Apply	20	25	25	20	25	25	25	25	25	25
4	Analyze	20	25	25	20	25	25	25	25	25	25
5	Evaluate	15	10	10	15	15	15	15	15	10	10
6	Create	15	10	10	15	15	15	15	15	10	10
	Total (%)	100	100	100	100	100	100	100	100	100	100

Strategies

Technology		Pedagogy / Andragogy		Sustainable Development	
Simulations		Clarification/Pauses	✓	Good Health & Well Being	✓
Presentation Tools	✓	Group Discussion	✓	Quality Education	✓
Learning Management System	✓	Hands-on Practice	✓	Gender Equality	✓
		Debate	✓		
		Interactive Lecture	✓		
		Brainstorming	✓		

* The evaluation can be done on one or more parameters that include, (i) Seminars, (ii) Mini-Project, (iii) Case-Studies, (iv) MOOC Certification, (v) Publication of Article, (vi) Presentation of Research Work in Conferences, (vii) Assignments

Designers					
Professional Experts		**Higher Institution Experts**		**Internal Experts**	
1	Mr.Jothi Periaswamy, Founder/Chief Data Scientist, DeepSphere AI, 2 Venture Drive, #13-26 Vision Exchange, Singapore, 608526	1	Dr.S.Gopinathan, Professor and Head, Department of Computer Science, University of Madras, Guindy Campus,,Chennai-600025	1	Dr. Nithya S, SRMIST, KTR Campus

Course Code	UCD24S02L	Course Title	Quantitative Aptitude and Logical Reasoning	Category	S	Skill Enhancement Course	L	T	P	C
							0	0	2	1

Course Offering Department	Career Guidance	Pre-requisite Courses	Nil	Co-requisite Courses	Nil	Progressive Courses	Nil	Data Book / Codes/Standards	Nil

CLR	The purpose of learning this course is to:	Depth				Attainment			Programme Learning Outcomes									
		1	2	3	4	1	2	3	1	2	3	4	5	6	7	8	9	10
CLR-1	Illustrate the application of different principles in solving mathematical problems																	
CLR-2	Foster students' curiosity and understanding of concepts related to profit/loss, interest computation, and averages																	
CLR-3	Analyze fundamental mathematical concepts concerning permutation and combination, as well as time and work, with a critical perspective																	
CLR-4	Equip students with the abilities essential for generating and comprehending data, focusing on topics such as cubes, dices and blood relations																	
CLR-5	Empower students to grasp the fundamentals of reasoning																	

CLO	At the end of this course, learners will be able to:	Conceive	Design	Implement	Operate	Bloom's Level of Thinking	Expected Proficiency (%)	Expected Attainment (%)	Problem Solving, Critical Thinking, Creativity Solving	Communication Skills, Collaborating Skills	Independent Thinking, Analytical Reasoning, Learning to Learn, Research Skills	Leadership Qualities, Professionalism, Autonomy, Accountability	Digital Technology Skills	Value Inculcation, Multicultural inclusivity	Environmental Action, Community Engagement	Entrepreneurial Risk Taking	PSO-1	PSO-2
CLO-1	Grasp, evaluate, and tackle problems involving numbers and percentages	✓	✓	-	-	2	85	75	3	1	3	-	2	2	-	-	-	-
CLO-2	Develop, solve, interpret, and apply fundamental mathematical models relevant to everyday situations	✓	✓	✓	-	2	85	75	3	1	3	-	2	2	-	-	-	-
CLO-3	Realize the principles of permutation and combination, probability, time and work, and adopt simplified and innovative approaches to problem- solving	✓	✓	✓	✓	3	85	75	3	1	3	-	2	2	-	-	-	-
CLO-4	Comprehend the concepts of data interpretation, data sufficiency, coding and decoding	✓	✓	✓	✓	3	85	75		1	3	-	2	2	-	-	-	-
CLO-5	Solve logical puzzles and reasoning challenges	✓	✓	✓	✓	3	85	75		1	3	-	2	2	-	-	-	-

Sessions	CLO - 1	CLO - 2	CLO – 3	CLO - 4	CLO - 5
	6	6	6	6	6
SLO-1	Classification of numbers and Test of divisibility	Profit and Loss	Permutation and Combination	Cubes and Dice	Direction Sense
SLO-2	Unit digit and Trailed zeroes	Ratio and Proportions	Problems on Probability	Data Interpretation	Number Series and Word Series
SLO-3	Problems on HCFand LCM	Simple Interest and Compound Interest	Time and work - Men and Work	Data sufficiency	Odd man out Missing Number and Wrong Number

SLO-4	Problems on Partnership	Word problems on Linear and Simultaneous Equations	Time and Work - Pipes and Cisterns	Seating Arrangements – Linear and Circular	Puzzles - Concepts & Problems Syllogisms - Concepts & Problems
SLO-5	Problems on Percentage	Problems on Averages	Time, Speed and Distance - Problems on Trains	Problems on Blood Relations	Problems on Clocks
SLO-6	Percentage - Increasing & Decreasing functions	Mixtures and Alligations	Time, Speed and Distance - Boats & Streams	Coding – Decoding	Problems on Calendars

Resources

1	Abhijit Guha, Quantitative Aptitude for Competitive Examinations, Tata McGraw Hill, 5th Edition	4	Dr. Agarwal. R. S, Quantitative Aptitude for Competitive Examinations, S. Chand and Company Limited, 2018 Edition
2	Archana Ram, Place Mentor: Tests of Aptitude for Placement Readiness, Oxford University Press, Oxford, 2018	5	Edgar Thrope, Test of Reasoning for Competitive Examinations, Tata McGraw Hill, 6th Edition
3	Dinesh Khattar, The Pearson Guide to Quantitative Aptitude for competitive examinations, Pearson, 3rd Edition	6	P A Anand, Quantitative Aptitude for competitive examinations, Wiley publications, e book, 2019

Assessment

Bloom's Level of Thinking	Continuous Learning Assessment (CLA) (100% weightage)			
	CLA – 1	**CLA – 2**	**CLA – 3**	**CLA – 4 ***
	(20 %)	**(20 %)**	**(30 %)**	**(30%)**
	Practice (%)	**Practice (%)**	**Practice (%)**	**Practice (%)**
1 **Remember**	20	10	20	10
2 **Understand**	20	10	20	10
3 **Apply**	20	20	20	20
4 **Analyze**	20	20	20	20
5 **Evaluate**	10	20	10	20
6 **Create**	10	20	10	20
Total (%)	100	100	100	100

Strategies

Technology		Pedagogy / Andragogy		Sustainable Development	
Simulations		Clarification/Pauses	✓	Good Health & Well Being	✓
Presentation Tools	✓	Group Discussion	✓	Quality Education	✓
Learning Management System	✓	Hands-on Practice	✓	Gender Equality	✓
		Debate	✓		
		Interactive Lecture	✓		
		Brainstorming	✓		

* The evaluation can be done on one or more parameters that include, (i) Seminars, (ii) Mini-Project, (iii) Case-Studies, (iv) MOOC Certification, (v) Publication of Article, (vi) Presentation of Research Work in Conferences, (vii) Assignments

Designers		
Professional Experts	**Higher Institution Experts**	**Internal Experts**
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		2 Dr. Aarthi S, Assistant Professor, Department of Career Guidance Cell, FSH, SRMIST aarthis4@srmist.edu.in

Course Code	UNS24Y01L UNC24Y01L UNO24Y01L UYG24Y01L	Course Title	NSS/NCC/NSO/YOGA	Category	Y	Mandatory Courses	L	T	P	C
							0	0	0	0

Course Offering Department	NSS	Pre-requisite Courses	Nil	Co-requisite Courses	Nil	Progressive Courses	Nil	Data Book / Codes/Standards	Nil

CLR	The purpose of learning this course is to:	Depth				Attainment			Programme Learning Outcomes										
		1	2	3	4	1	2	3	1	2	3	4	5	6	7	8	9	10	
CLR-1	Understand themselves in relation to their community																		
CLR-2	Develop among themselves a sense of social and civic responsibility																		
CLR-3	Utilize their knowledge in finding practical solution to individual and community problems																		
CLR-4	Develop competence required for group-living and sharing of responsibilities																		
CLR-5	Acquire leadership qualities and democratic attitude																		
		Conceive	Design	Implement	Operate	Bloom's Level of Thinking	Expected Proficiency (%)	Expected Attainment (%)	Problem Solving, Critical Thinking, Creative Solving	Communication Skills, Collaborating Skills	Independent Thinking, Analytical Reasoning, Learning to Learn, Research	Leadership Qualities, Professionalism, Autonomy, Accountability	Digital Technology Skills	Value Inculcation, Multicultural Inclusivity	Environmental Action, Community Engagement	Entrepreneurial/RiskTaking		PSO 1	PSO 2
CLO	At the end of this course, learners will be able to:																		
CLO-1	realize themselves in relation to their community	✓	✓	-	-	2	85	75	3	-	-	1		3	3	2			
CLO-2	Develop among themselves a sense of social and civic responsibility	✓	✓	✓	-	2	85	75	3	2	1	2		3	3	1			
CLO-3	find practical solution to individual and community problems	✓	✓	✓	✓	3	85	75	3	1	3	1		3	3	1			
CLO-4	Develop competence required for group-living and sharing of responsibilities	✓	✓	✓	✓	3	85	75	3	3	2	3		3	3	2			
CLO-5	develop leadership qualities and democratic attitude	✓	✓	✓	✓	3	85	75	3	3	2	3		3	3	3			

Assessment is Fully Internal

Assessment					
Bloom's Level of Thinking	Continuous Learning Assessment (CLA) (100% weightage)				
	CLA – 1 *	CLA – 2 *	CLA – 3 *	CLA – 4 *	
	(20%)	(30%)	(30%)	(20 %)	
	Practice (%)	Practice (%)	Practice (%)	Practice (%)	
1 Remember	20	20	20	20	
2 Understand	20	20	20	20	
3 Apply	40	40	40	40	
4 Analyze	20	20	20	20	
5 Evaluate					
6 Create					
Total (%)	100	100	100	100	

Strategies					
Technology		**Pedagogy / Andragogy**		**Sustainable Development**	
Simulations		Clarification/Pauses		Good Health & Well Being	✔
Presentation Tools		Group Discussion	✔	Quality Education	
Learning Management System		Hands-on Practice	✔	Gender Equality	✔
		Debate	✔		
		Interactive Lecture	✔		
		Brainstorming			

*CLA s are evaluated based on (i) participation in awareness programmes, (ii) participation in outreach programme, (iii) Community Services (iv) Camps (National, State, Regional)

Resources
1. NSS Manual (Revised), Govermnment of India

Designers		
Professional Experts	**Higher Institution Experts**	**Internal Experts**
1 Dr Samuel Chellaiya C Regional Director, NSS Government of India	1 State Officer, NSS Tamil Nadu NSS	1 Dr Prakash V, NSS Coordinator, SRMIST, AP, department of Economics, FSH, SRMIST Prakashv2@srmist.edu.in
		2 Dr Yogalakshmi, NSS Programme Officer, FSH, SRMIST.