Kolhapur Institute of Technology's College of Engineering (Autonomous), Kolhapur

Department of Computer Science and Engineering (Data Science)

Curriculum and Syllabus

for

B. Tech. Computer Science and Engineering (Data Science)

Scheme: 2024-25 (As Per NEP)

ABOUT THE DEPARTMENT

Welcome to the department of Computer science and engineering (Data Science).The department is established in year 2021-22.Data Science is an interdisciplinary course combining various domains of Statistics, Analytics, Knowledge Extraction and Data Visualization. In today's technical world, the exponential growth of data, requires a science ensuring that the huge volumes of data is handled accurately, analyzed efficiently, knowledge is extracted appropriately and visualized perfectly. Data Science is a complete integration of all these requirements. This course helps students to build mathematical and engineering skills required to advance their career as a Data Scientist or Data Analyst or Data Engineer and many more. The department aims to train students in rapidly growing areas of data science and encourage them for global certifications. Department places emphasis on all the important aspects of computers engineering such as Programming, Algorithm Design, Operating Systems, Computer Networks, Mobile Communication, Artificial Intelligence, Machine Learning and many more.

Special focus is given to courses like Fundamentals of Data Science, Data Pre-processing, Data Wrangling, Data Analytics, Data Visualization, Big Data etc. These will help the students in acquiring the required knowledge and expertise to start their career as a Data Analyst, Data Engineer, Data Scientist and many other opportunities in the current industry. Many seminars, conferences, certifications, and training sessions will be conducted by the department to make the students develop themselves globally.

DEPARTMENT VISION

To emerge as a leading department in Technical Education and Research in Computer Science and Engineering, especially in the Data Science domain with focus to produce professionally competent and socially sensitive engineers capable of working in a global environment.

DEPARTMENT MISSION

M1	To impart necessary technical and professional skills in the field of Computer Science and Engineering with specialization of Data Science amongst students to make them competent enough from employability, higher education & entrepreneurship point of view with commitment towards lifelong learning.
M2	To produce the socially sensitive engineers capable of working in a global IT environment who will be competent technocrats to meet current industrial challenges.
M3	To collaborate with the data science industry through project-based learning, internships enabling the students to explore, apply various directions of learning.
M4	To enable the graduates to use modern tools, to design and develop Data Science enabled products and communicate effectively with professional ethics.

PROGRAMME EDUCATIONAL OBJECTIVES (PEO)	
PEO1	Graduate will gain knowledge in core computer science and engineering fields such as networks, data management and application development.
PEO2	Graduate will gain expertise in different aspects of Computer Science and Data Science related fields such as Statistical foundations of data Science, data collection, visualization, processing and modelling of large data sets and related programming knowledge
PEO3	Graduate will demonstrate proficiency with statistical analysis, data management and create models using applied statistics mathematics to solve future challenges and real-world problems exhibit team management capability with proper communication in a job environment.
PEO4	Graduate will be trained as professionals to cater the growing demand for data scientists and engineers in industry.

PROGRAMME OUTCOMES (PO)	
PO1	**Engineering knowledge:** Apply the knowledge of mathematics, basic science and in-depth technical competence in computer science and engineering discipline to meet the solution of complex engineering problems.
PO2	**Problem Analysis:** Identify, formulate, review various computer science research literature, and analyze complex engineering problems using basic principles of mathematics, natural sciences, and engineering sciences to reach substantiated conclusions
PO3	**Design/development of Solutions:** Design software solutions for complex computer science and engineering problems and design system processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
PO4	**Conduct investigations of complex problems:** Use research-based knowledge and research methods in the field of computer science and engineering including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions
PO5	**Modern tool usage:** Create, select, and apply appropriate techniques, resources, and software tools including prediction and modeling to complex engineering activities with an understanding of the limitations
PO6	**The engineer and society:** Apply reasoning obtained from the contextual knowledge of computer science to assess societal, health, safety, legal and cultural issues, and the consequent responsibilities relevant to the professional engineering practice
PO7	**Environment and sustainability:** Understand the impact of the software solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
PO8	**Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of the computer science and engineering practice
PO9	**Individual and team work:** Function effectively as an individual, and as a member or Leader in diverse teams, and in multidisciplinary settings.
PO10	**Communication:** Communicate effectively on complex computer engineering activities with the engineering community and with society at large, such as being able to make effective presentations, write effective reports and design documentation.

PO11	**Project management and finance:** Demonstrate knowledge and understanding of the software engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
PO12	**Life-long learning:** Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of computer engineering and technological change.

PROGRAMME SPECIFIC OUTCOMES (PSO)	
PSO1	**Academic competence:** Understand fundamental concepts in statistics, mathematics and computer science and apply these concepts in core areas of the Data Science domain to solve industry and societal problems. Exposure to emerging trends and technologies to prepare students for industry ready.
PSO2	**Personal and Professional Competence:** Design and Develop models in Data Science for real life problem solving in multidisciplinary fields using visualization and interpretation, machine learning, deep learning, and Big Data analytics, through acquired knowledge and current industry trends based on modern tools to solve case studies by applying various technologies.

MAPPING OF PEOS TO POS

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12
PEO1	1		1		3			1				1
PEO2	1	2	3	1	2			3				3
PEO3	1		1					2	3		3	2
PEO4	1	1		3		3	1	2		1		2

MAPPING OF PEOS TO PSOS

	PSO1	PSO2
PEO1	2	2
PEO2	-	3
PEO3	1	2
PEO4	2	3

As per NEP Guidelines

Proposed Scheme of Credit Distribution

	Year	FY		SY		TY		B. Tech.			
Sr. No.	Type of Course	I	II	III	IV	V	VI	VII	VIII	Actual	NEP Guidelines
1	BS: Basic Science	8	8							16	14-18
2	ES: Engineering Science	7	6							13	12-16
3	PC: Programme Core	3		16	15	10	11	11		66	44-56
4	PE: Programme Elective					3	3	3	6	15	20
5	MM: Multi Minor			2	3	3	3	3		14	14
6	OE: Open Elective					3	3	2		8	8
7	VS: Vocational and Skill Enhancement course	1	3		1	1				6	8
8	AE: Ability Enhancement		3			1				4	4
9	EM: Entrepreneurship /Economics/ Management courses (Mgt/Economics/Mkt/Finance)			2			2			4	4
10	IK: Indian Knowledge System	2								2	2
11	VE: Value Education			2	2					4	4
12	IL: Research Methodology (Project)							4		4	4
13	IL: Comm. Engg Project/Field Project (PBL/Seminar/Mini Project)					1	1			2	2
14	IL: Project								4	4	4
15	IL: Internship/OJT (PBL/Seminar/Mini Project/Virtual Internship/Physical)			1	1				6	8	12
16	CC: Co-curricular Courses		1		1		1		1	4	4
		20-22	20-22	20-22	20-22	20-22	20-22	20-22	20-22	174	
		21	21	23	23	22	2	23	17	174	

SEMESTER III													
Sr. No.	**Category**	**Course Code**	**Course Name**	**L**	**T**	**P**	**Hrs/ Week**	**Credits**	**Evaluation Scheme (Components)**			
1	PC	UDSPC0301	Discrete Mathematics and Graph Theory	3	1	-	4	4	ISE1 MSE ISE2 ESE	10 30 10 50	 20	40
2	PC	UDSPC0302	Linear Algebra	3	-	-	3	3	ISE1 MSE ISE2 ESE	10 30 10 50	 20	40
3	PC	UDSPC0303	Advanced Data Structures	3	-	-	3	3	ISE1 MSE ISE2 ESE	10 30 10 50	 20	40
4	PC	UDSPC0304	Database Management System	3	-	-	3	3	ISE1 MSE ISE2 ESE	10 30 10 50	 20	40
5	VEC	UDSVE0305	Constitution of India	2	-	-	2	2	ISE	50	20	20
6	HSSM	UDSEM0306	Principles of AIDS	2	-	-	2	2	ESE	50	20	20
7	PC	UDSPC0331	Advanced Data Structures Laboratory	-	-	2	2	1	ISE ESE (POE)	25 50	10 20	
8	PC	UDSPC0332	Database Management System Laboratory			2	2	1	ISE ESE (POE)	25 25	10 10	
9	PC	UDSPC0333	Software System Tools Laboratory			2	2	1	ISE	25	10	
10	OJT	UDSIL0371	Mini Project-I			2	2	1	ISE	50	20	
11	MM	UDSMM03**	MM-1	2			2	2	ESE	100	40	
						Total:	**27**	**23**	**Total Marks: 800** **Total Credit: 23**			

SEMESTER IV													
Sr. No.	**Category**	**Course Code**	**Course Name**	**L**	**T**	**P**	**Hrs/ Week**	**Credits**	**Evaluation Scheme (Components)**				
1	PC	UDSPC0401	Computer Networks	2	-	-	2	2	ISE1 MSE ISE2 ESE	10 30 10 50	 20		40
2	PC	UDSPC0402	Automata Theory	3	-	-	3	3	ISE1 MSE ISE2 ESE	10 30 10 50	 20		40
3	PC	UDSPC0403	Design And Analysis of Algorithms	3	-	-	3	3	ISE1 MSE ISE2 ESE	10 30 10 50	 20		40
4	PC	UDSPC0404	Statistics and Probability	3	-	-	3	3	ISE1 MSE ISE2 ESE	10 30 10 50	 20		40
5	PC	UDSPC0405	Object Oriented Programming in Java	2	-	-	2	2	ISE1 MSE ISE2 ESE	10 30 10 50	 20		40
6	VEC	UDSVE0406	Environmental Studies	2	-	-	2	2	ISE	50	20		20
7	PC	UDSPC0431	Object Oriented Programming Laboratory	-	-	2	2	1	ISE ESE (POE)	25 25	10 10		
8	PC	UDSPC0432	Data Analytics & Visualization Tools Laboratory	-	-	2	2	1	ISE	25	10		
9	OJT	UDSIL0471	Mini Project-II	-	-	2	2	1	ISE	25	10		
10	VSEC	UDSVS0433	AI DS Tools Laboratory	-	-	2	2	1	ISE ESE (POE)	25 25	10 10		
11	CC	UDSCC0434	Co-curricular Activities-II	-	-	2	2	1	ISE	50	20		
12	MM	UDSMM04**	MM-2	3	-		3	3	ESE	100	40		
						Total:	**28**	**23**	**Total Marks: 850** **Total Credit: 23**				

SEMESTER V													
Sr. No.	**Category**	**Course Code**	**Course Name**	**L**	**T**	**P**	**Hrs/ Week**	**Credits**	**Evaluation Scheme (Components)**			
1	PC	UDSPC0501	Machine Learning	3	-	-	3	3	ISE1 MSE ISE2 ESE	10 30 10 50	 20	40
2	PC	UDSPC0502	Computer Organization and Operating System	2	-	-	2	2	ISE1 MSE ISE2 ESE	10 30 10 50	 20	40
3	PC	UDSPC0503	Exploratory Data Analytics	3	-	-	3	3	ISE1 MSE ISE2 ESE	10 30 10 50	 20	40
4	PE	UDSPE05**	Program Elective-I	3	-	-	3	3	ISE1 MSE ISE2 ESE	10 30 10 50	 20	40
5	OE	UDSOE0521	Open Elective-I	3	-	-	3	3	ISE1 MSE ISE2 ESE	10 30 10 50	 20	40
6	HSSM	UDSAE0534	Business Communication and Value Science	-	-	2	2	1	ISE	50	20	20
7	PC	UDSPC0531	Machine Learning Laboratory	-	-	2	2	1	ISE	25	10	
8	PC	UDSPC0532	Advanced Java Programming Laboratory	-	-	2	2	1	ISE ESE (POE)	25 25	10 10	
10	VSEC	UDSVS0533	Exploratory Data Analytics Laboratory	-	-	2	2	1	ISE ESE (POE)	25 25	10 10	
11	CEP	UDSIL0571	Mini Project (Android)-III	-	-	2	2	1	ISE	25	10	
12	MM	UDSMM05**	MM-3	3	-	-	3	3	ESE	100	40	
			Total:				**27**	**22**	**Total Marks: 800** **Total Credit: 22**			

SEMESTER VI													
Sr. No.	**Category**	**Course Code**	**Course Name**	**L**	**T**	**P**	**Hrs/ Week**	**Credits**	**Evaluation Scheme (Components)**			
1	PC	UDSPC0601	Deep Learning	3	-	-	3	3	ISE1 MSE ISE2 ESE	10 30 10 50	 20	40
2	PC	UDSPC0602	Natural Language Processing	2	-	-	2	2	ISE1 MSE ISE2 ESE	10 30 10 50	 20	40
3	PC	UDSPC0603	Image Processing & Computer Vision	3	-	-	3	3	ISE1 MSE ISE2 ESE	10 30 10 50	 20	40
4	PE	UDSPE06**	Program Elective-II	3	-	-	3	3	ISE1 MSE ISE2 ESE	10 30 10 50	 20	40
5	OE	UDSOE0621	Open Elective-II	3	-	-	3	3	ISE1 MSE ISE2 ESE	10 30 10 50	 20	40
6	HSSM	UDSEM0604	Software Engineering & Project Management	2	-	-	2	2	ESE	50	20	20
7	PC	UDSPC0631	Deep Learning Laboratory	-	-	2	2	1	ISE ESE (POE)	25 25	10 10	
8	PC	UDSPC0632	Image Processing & Computer Vision Laboratory	-	-	2	2	1	ISE	25	10	
9	PC	UDSPC0633	Advanced Web Development Laboratory	-	-	2	2	1	ISE ESE (POE)	25 25	10 10	
10	CEP	UDSIL0671	Mini Project -IV	-	-	2	2	1	ISE	25	10	
11	CC	UDSCC0634	Co-curricular Activities-III	-	-	2	2	1	ISE	50	20	
12	MM	UDSMM06**	MM-4	3	-	-	3	3	ESE	100	40	
			Total:				**29**	**24**	**Total Marks: 850** **Total Credit: 24**			

SEMESTER VII													
Sr. No.	**Category**	**Course Code**	**Course Name**	**L**	**T**	**P**	**Hrs/ Week**	**Credits**	**Evaluation Scheme (Components)**				
1	PC	UDSPC0701	Information Security	3	-	-	3	3	ISE1 MSE ISE2 ESE	10 30 10 50	 20		40
2	PC	UDSPC0702	Generative AI	3	-	-	3	3	ISE1 MSE ISE2 ESE	10 30 10 50	 20		40
3	PC	UDSPC0703	Internet of Things & Cloud Computing	3	-	-	3	3	ISE1 MSE ISE2 ESE	10 30 10 50	 20		40
4	PE	UDSPE07**	Program Elective-III	3	-	-	3	3	ISE1 MSE ISE2 ESE	10 30 10 50	 20		40
5	OE	UDSOE0721	Open Elective-III	2	-	-	2	2	ISE1 MSE ISE2 ESE	10 30 10 50	 20		40
6	PC	UDSPC0731	Advance Deep Learning Laboratory	-	-	2	2	1	ISE ESE (POE)	25 25	10 10		
7	PC	UDSPC0732	ML DevOps Laboratory	-	-	2	2	1	ISE ESE (POE)	25 25	10 10		
8	RM	UDSIL0771	Project-I	-	-	2	2	4	ISE I ESE (OE)	50 50	40		
12	MM	UDSMM07**	MM-5	3	-	-	3	3	ESE	100	40		
			Total:				**23**	**23**	**Total Marks: 800** **Total Credit: 23**				

SEMESTER VIII												
Sr. No.	**Category**	**Course Code**	**Course Name**	**L**	**T**	**P**	**Hrs/ Week**	**Credits**	**Evaluation Scheme (Components)**			
1	PE	UDSPE08**	Program Elective-IV	3	-	-	3	3	ISE1 MSE ISE2 ESE	10 30 10 50	 20	40
2	OE	UDSPE08**	Program Elective-V	3	-	-	3	3	ISE1 MSE ISE2 ESE	10 30 10 50	 20	40
3	RM	UDSIL0871	Project-II	-	-	8	8	4	ISE I ESE (OE)	50 50	40	
4	OJT	UDSIL0872	Internship	-	-	12	12	6	ISE I ISE II	75 75	75	
5	CC	UDSCC0831	Co-curricular Activities-IV	-	-	2	2	1	ISE	50	20	
			Total:				**28**	**17**	**Total Marks: 500** **Total Credit: 17**			

PC: PROGRAM CORE							
Sr. No.	**Course Code**	**Course Name**	**L**	**T**	**P**	**Hrs. / Week**	**Credits**
1	UDSPC0301	Discrete Mathematics and Graph Theory	3	1	-	4	4
2	UDSPC0302	Linear Algebra	3	-	-	3	3
3	UDSPC0303	Advanced Data Structures	3	-	-	3	3
4	UDSPC0304	Database Management System	3	-	-	3	3
5	UDSPC0331	Advanced Data Structures Laboratory	-	-	2	2	1
6	UDSPC0332	Database Management System Laboratory	-	-	2	2	1
7	UAMPC0333	Software System Tools Laboratory	-	-	2	2	1
8	UDSPC0401	Computer Networks	2	-	-	2	2
9	UDSPC0402	Automata Theory	3	-	-	3	3
10	UDSPC0403	Design And Analysis of Algorithms	3	-	-	3	3
11	UDSPC0404	Statistics and Probability	3	-	-	3	3
12	UDSPC0405	Object Oriented Programming in Java	2	-	-	2	2
13	UDSPC0431	Object Oriented Programming Laboratory	-	-	2	2	1
14	UDSPC0432	Data Analytics & Visualization Tools Laboratory	-	-	2	2	1
15	UDSPC0501	Machine Learning	3	-	-	3	3
16	UDSPC0502	Computer Organization and Operating System	2	-	-	2	2
17	UDSPC0503	Exploratory Data Analytics	3	-	-	3	3
18	UDSPC0531	Machine Learning Laboratory	-	-	2	2	1
19	UDSPC0532	Advanced Java Programming Laboratory	-	-	2	2	1
20	UDSPC0601	Deep Learning	3	-	-	3	3
21	UDSPC0602	Natural Language Processing	2	-	-	2	2
22	UDSPC0603	Image processing & Computer Vision	3	-	-	3	3
23	UDSPC0631	Deep Learning Laboratory	-	-	2	2	1
24	UDSPC0632	Image processing & Computer Vision Laboratory	-	-	2	2	1
25	UDSPC0633	Advanced Web Development Laboratory	-	-	2	2	1
26	UDSPC0701	Information Security	3	-	-	3	3
27	UDSPC0702	Generative AI	3	-	-	3	3
28	UDSPC0703	Internet of Things & Cloud Computing	3	-	-	3	3
29	UDSPC0731	Advanced Deep Learning Laboratory	-	-	2	2	1
30	UDSPC0732	ML DevOps Laboratory	-	-	2	2	1
					Total:	**75**	**63**

PE: PROGRAM ELECTIVE– I							
Sr. No.	**Course Code**	**Course Name**	**L**	**T**	**P**	**Hrs. / Week**	**Credits**
1	UDSPE0511	Human Computer Interaction (UI/UX) (PE-I)	3	-	-	3	3
2	UDSPE0512	Intelligent Robot (PE-I)	3	-	-	3	3
3	UDSPE0513	Storage Area Networks (PE-I)	3	-	-	3	3

PE: PROGRAM ELECTIVE - II							
Sr. No.	**Course Code**	**Course Name**	**L**	**T**	**P**	**Hrs. / Week**	**Credits**
1	UDSPE0611	Business Intelligence (PE-II)	3	-	-	3	3
2	UDSPE0612	Introduction to Augmented Reality Virtual Reality (ARVR) (PE-II)	3	-	-	3	3
3	UDSPE0613	Robotics Process Automation (PE-II)	3	-	-	3	3

PE: PROGRAM ELECTIVE - III							
Sr. No.	**Course Code**	**Course Name**	**L**	**T**	**P**	**Hrs. / Week**	**Credits**
1	UDSPE0711	AI in healthcare (PE-III)	3	-	-	3	3
2	UDSPE0712	Time Series Analysis (PE-III)	3	-	-	3	3
3	UDSPE0713	Data Mining (PE-III)	3	-	-	3	3

PE: PROGRAM ELECTIVE - IV							
Sr. No.	**Course Code**	**Course Name**	**L**	**T**	**P**	**Hrs. / Week**	**Credits**
1	UDSPE0811	Big Data Analytics (PE-IV)	3	-	-	3	3
2	UDSPE0812	Nature Inspired Computing (PE-IV)	3	-	-	3	3
3	UDSPE0813	Edge Computing (PE-IV)	3	-	-	3	3

PE: PROGRAM ELECTIVE - V							
Sr. No.	**Course Code**	**Course Name**	**L**	**T**	**P**	**Hrs. / Week**	**Credits**
1	UDSPE0814	AI in smart manufacturing (PE-V)	3	-	-	3	3
2	UDSPE0815	AI in finance (PE-V)	3	-	-	3	3

MM: Multi-Disciplinary Minor Courses - Biomedical Engineering (Basket 1)							
Sr. No.	**Course Code**	**Course Name**	**L**	**T**	**P**	**Hrs. / Week**	**Credits**
1	UDSMM0341	Basics of Biomedical Engineering (MM-I)	2	-	-	2	2
2	UDSMM0441	Biostatistics and Algorithms (MM-II)	3	-	-	3	3
3	UDSMM0541	Soft Computing (MM-III)	3	-	-	3	3
4	UDSMM0641	Medical Image Analysis (MM-IV)	3	-	-	3	3
5	UDSMM0741	AI based Medical Automation (MM-V)	3	-	-	3	3
					Total:	**14**	**14**

MM: Multi-Disciplinary Minor Courses - Finance Engineering (Basket 2)							
Sr. No.	**Course Code**	**Course Name**	**L**	**T**	**P**	**Hrs. / Week**	**Credits**
1	UDSMM0342	Fundamentals of Finance for Engineering (MM-I)	2	-	-	2	2
2	UDSMM0442	Blockchain Technologies and FinTech (MM-II)	3	-	-	3	3
3	UDSMM0542	Time Series Analysis (MM-III)	3	-	-	3	3
4	UDSMM0642	Machine Learning for Finance (MM-IV)	3	-	-	3	3
5	UDSMM0742	Deep Learning for Finance (MM-V)	3	-	-	3	3
					Total:	**14**	**14**

MM: Multi-Disciplinary Minor Courses - Embedded Systems (Basket 3)							
Sr. No.	**Course Code**	**Course Name**	**L**	**T**	**P**	**Hrs. / Week**	**Credits**
1	UDSMM0343	Digital Electronics (MM-I)	2	-	-	2	2
2	UDSMM0443	Microprocessor and Microcontrollers (MM-II)	3	-	-	3	3
3	UDSMM0543	Embedded Systems (MM-III)	3	-	-	3	3
4	UDSMN0643	IoT with Arduino and Raspberry Pi (MM-IV)	3	-	-	3	3
5	UDSMM0743	AI in Embedded Systems (MM-V)	3	-	-	3	3
					Total:	**14**	**14**

VS: VOCATIONAL AND SKILL ENHANCEMENT COURSE							
Sr. No.	**Course Code**	**Course Name**	**L**	**T**	**P**	**Hrs. / Week**	**Credits**
1	UDSVS0433	AI DS Tools Laboratory	-	-	2	2	1
2	UDSVS0533	Exploratory Data Analytics Laboratory	-	-	2	2	1

AE: ABILITY ENHANCEMENT COURSE							
Sr. No.	**Course Code**	**Course Name**	**L**	**T**	**P**	**Hrs. / Week**	**Credits**
1	UDSAE0534	Business Communication and Value Science	-	-	2	2	1

EM: ENTREPRENEURSHIP /ECONOMICS/ MANAGEMENT COURSES							
Sr. No.	**Course Code**	**Course Name**	**L**	**T**	**P**	**Hrs. / Week**	**Credits**
1	UDSEM0306	Principles of AIDS	2	-	-	2	2
2	UDSEM0604	Software Engineering & Project Management	2	-	-	2	2

VE: VALUE EDUCATION COURSE							
Sr. No.	**Course Code**	**Course Name**	**L**	**T**	**P**	**Hrs. / Week**	**Credits**
1	UDSVE0305	Constitution of India	2	-	-	2	2
2	UDSVE0406	Environmental Studies	2	-	-	2	2

IL: RESEARCH METHODOLOGY (PROJECT)							
Sr. No.	**Course Code**	**Course Name**	**L**	**T**	**P**	**Hrs. / Week**	**Credits**
1	UDSIL0771	Project-I	-	-	2	2	4

IL: COMMUNITY ENGINEERING PROJECT / FIELD PROJECT (PBL/SEMINAR/MINI-PROJECT)							
Sr. No.	**Course Code**	**Course Name**	**L**	**T**	**P**	**Hrs. / Week**	**Credits**
1	UDSIL0571	Mini Project (Android)-III	-	-	2	2	1
2	UDSIL0671	Mini Project -IV	-	-	2	2	1

IL: PROJECT							
Sr. No.	**Course Code**	**Course Name**	**L**	**T**	**P**	**Hrs. / Week**	**Credits**
1	UDSIL0871	Project-II	-	-	2	2	4

IL: INTERNSHIP/ON JOB TRAINING							
Sr. No.	**Course Code**	**Course Name**	**L**	**T**	**P**	**Hrs. / Week**	**Credits**
1	UDSIL0371	Mini Project-I	-	-	2	2	1
2	UDSIL0471	Mini Project-II	-	-	2	2	1
3	UDSIL0872	Internship	-	-	12	12	6

CC: CO-CURRICULAR COURSES							
Sr. No.	**Course Code**	**Course Name**	**L**	**T**	**P**	**Hrs. / Week**	**Credits**
1	UDSCC0434	Co-curricular Activities-II	-	-	2	2	1
2	UDSCC0634	Co-curricular Activities-III	-	-	2	2	1
3	UDSCC0831	Co-curricular Activities-IV			2	2	1

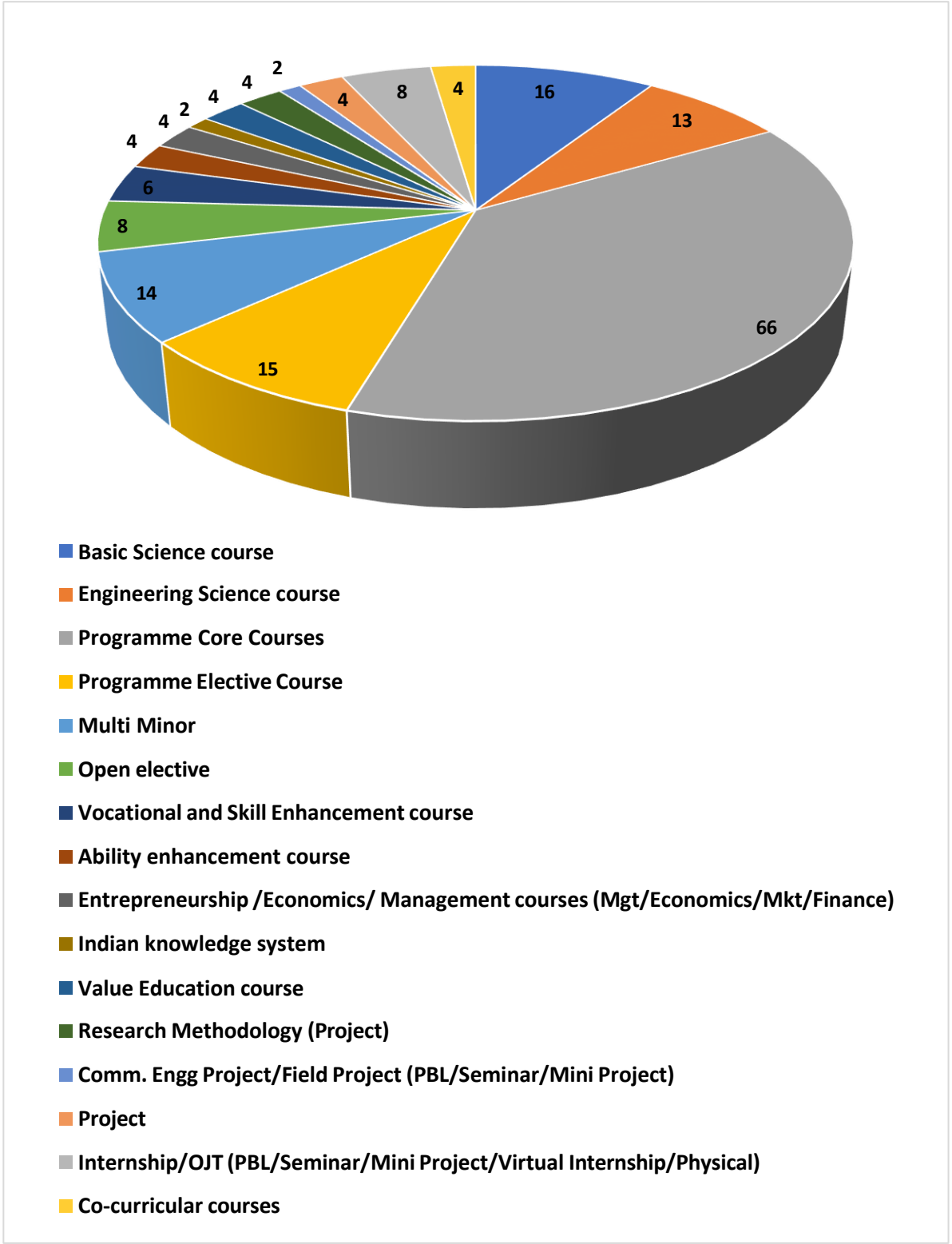
EX: EXIT COURSES - SY							
Sr. No.	**Course Code**	**Course Name**	**L**	**T**	**P**	**Hrs. / Week**	**Credits**
1	UDSEX0491	Certified Web Developer	3	-	-	3	3
2	UDSEX0492	Foundation Course in Machine Learning Using Python	3	-	-	3	3
3	UDSEX0493	Training	2	-	-	2	2
		Total:				**8**	**8**

EX: EXIT COURSES - TY							
Sr. No.	**Course Code**	**Course Name**	**L**	**T**	**P**	**Hrs. / Week**	**Credits**
1	UDSEX0691	Foundation Course in Artificial Intelligence Applications	3	-	-	3	3
2	UDSEX0692	Foundation Course in Information Security	3	-	-	3	3
3	UDSEX0693	Training	2	-	-	2	2
		Total:				**8**	**8**

HN: B. Tech Honors (Cyber Security)							
Sr. No.	**Course Code**	**Course Name**	**L**	**T**	**P**	**Hrs. / Week**	**Credits**
1	UDSHN0351	Fundamentals of Cyber Security	3	1	-	4	4
2	UDSHN0451	Applied Cryptography	3	1	-	4	4
3	UDSHN0551	Ethical Hacking	3	1	-	4	4
4	UDSHN0651	Blockchain Technology	3	1	-	4	4
5	UDSHN0751	Mini Project	2	-	-	2	2
					Total:	**18**	**18**

MN: Emerging Minor Specialization Courses							
Sr. No.	**Course Code**	**Course Name**	**L**	**T**	**P**	**Hrs. / Week**	**Credits**
1	UDSMN0361	Learning Analytics	3	1	-	4	4
2	UDSMN0461	ML DevOps	3	1	-	4	4
3	UDSMN0561	Advanced Deep Learning	3	1	-	4	4
4	UDSMN0661	Generative AI	3	1	-	4	4
5	UDSMN0761	Vision Transformer	2	-	-	2	2
					Total:	**18**	**18**

Credit Distribution



Pie chart showing the distribution of credits