

**Study Scheme: UG Programme
(2025 Batch onwards)**

**B.E. in Artificial Intelligence and Data
Science**

Vision & Mission of Department

Vision

To achieve technical & research excellence in the field of Computer Science and Engineering with industrial & social perspective.

Mission

- To provide environment for imparting high quality technical education, skill development, research and development.
- To disseminate sound knowledge of recent Computer Technologies by organizing seminar/workshops/short-term courses.
- To develop interaction and collaboration with the industry.
- To facilitate Hand-on training to the students for promoting Self-Employment.

Program Outcomes (PO's) – UG

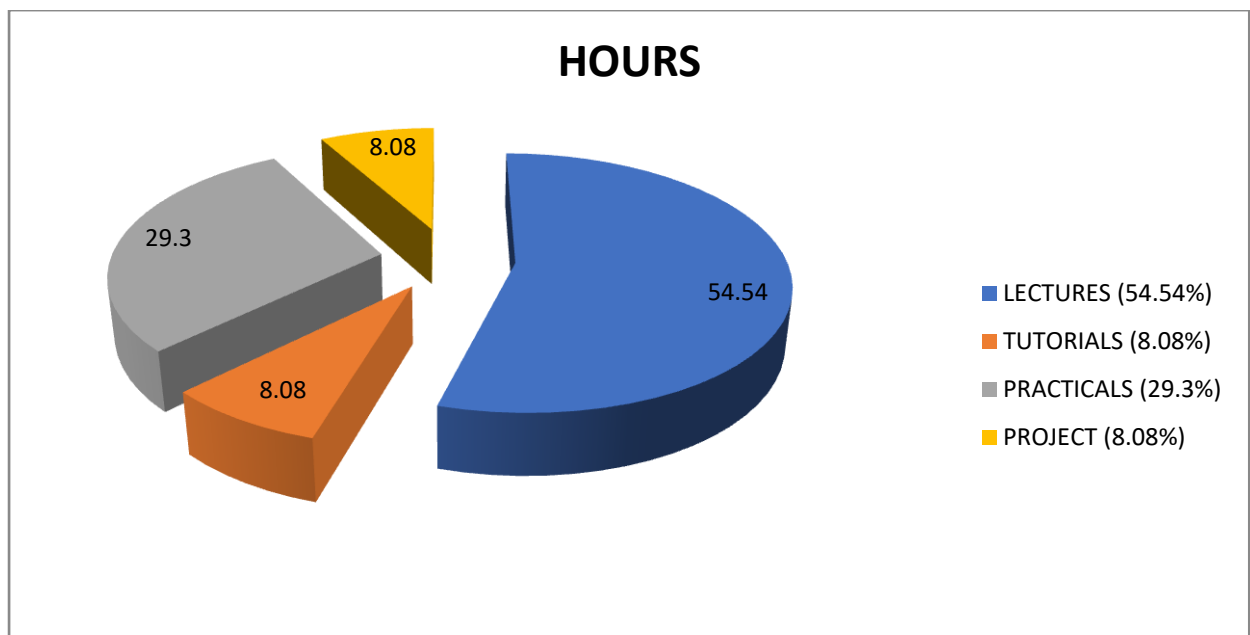
- 1) **Engineering knowledge:** Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
- 2) **Problem analysis:** Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
- 3) **Design / Development of solutions:** Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
- 4) **Conduct investigations of complex problems:** Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
- 5) **Modern tool usage:** Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.
- 6) **The engineer and society:** Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.
- 7) **Environment and sustainability:** Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
- 8) **Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
- 9) **Individual and team work:** Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
- 10) **Communication:** Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
- 11) **Project management and finance:** Demonstrate knowledge and understanding of the 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.

- 12) 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 technological change.

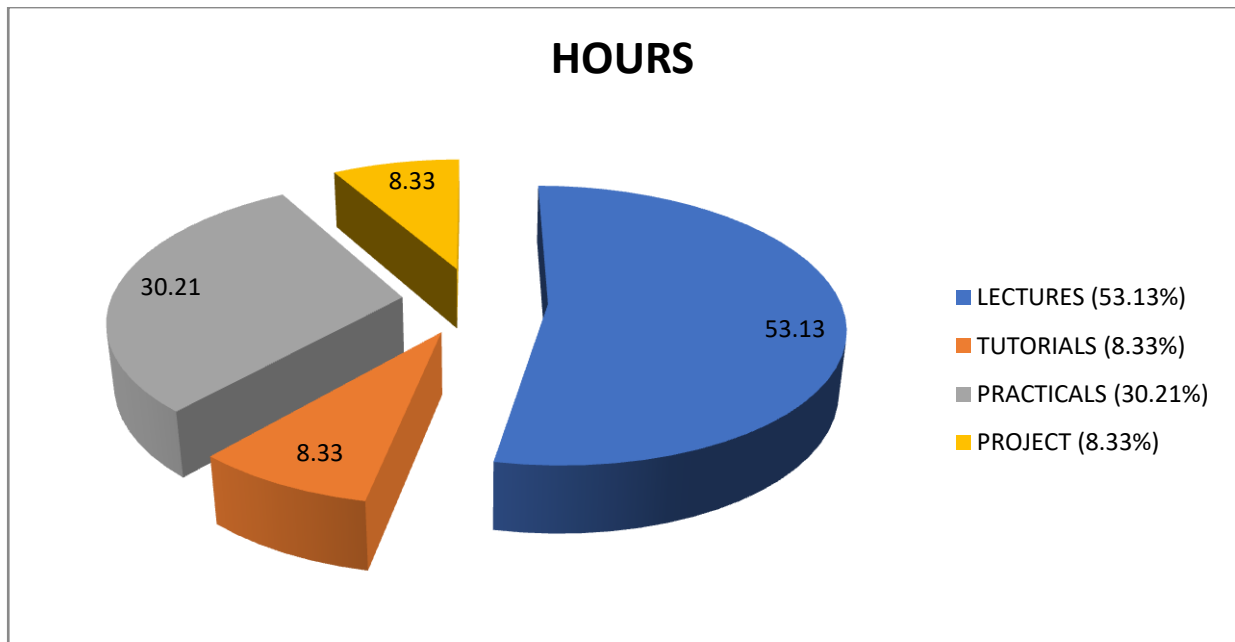
Program Specific Outcomes (PSO's) – UG

- 1) Program Specific Outcome (PSO) 1:** The ability to proficiently gather, preprocess, and scrutinize data, coupled with the application of a diverse array of AI algorithms and methodologies. This enables the extraction of practical insights, the resolution of intricate real-world challenges, and the stimulation of innovation across a multitude of sectors and industries.
- 2) Program Specific Outcome (PSO) 2:** The ability to demonstrate a commitment to ethical and responsible data handling and AI development practices, contributing to informed decision-making, technological advancement, and societal well-being.

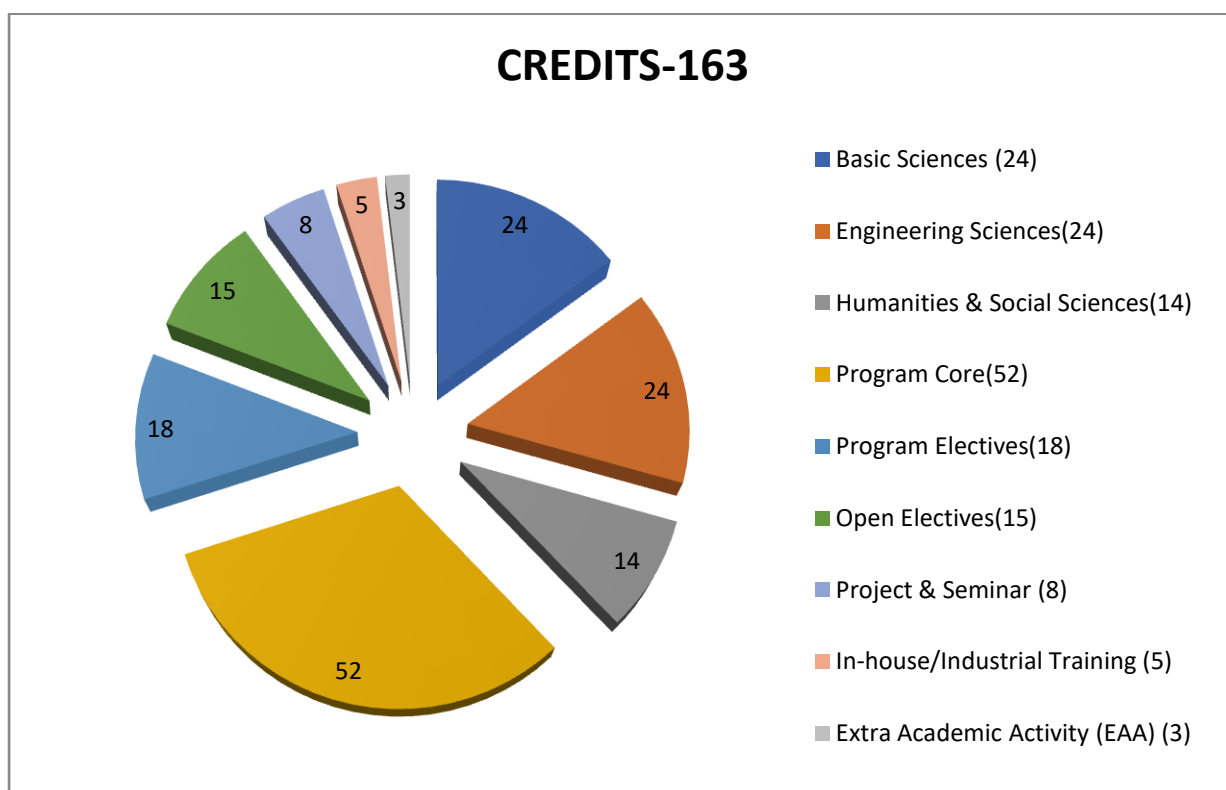
CONTACT HOURS DISTRIBUTION (UG)



CONTACT HOURS DISTRIBUTION (UG) OPTING INTERNSHIP IN INDUSTRY



DISTRIBUTION OF COURSE CREDITS (UG)



Study Scheme UG Programme: B.E. in Artificial Intelligence and Data Science

Semester-I							
S No	Sub Code	Subject Name	L	T	P	Hrs.	Credits
1	BSMA-401	Engineering Mathematics I	3	1	0	4	4
2	BSPH-401	Applied Physics	3	1	0	4	4
3	ESEE-401	Elements of Electrical Engineering	2	1	0	3	3
4	ESCS-401	Elements of Computer Engineering	2	0	0	2	2
5	ESEC-401	Elements of Electronics Engineering	2	0	0	2	2
6	BSPH-402	Applied Physics Lab	0	0	2	2	1
7	ESEE-402	Elements of Electrical Engineering Lab	0	0	2	2	1
8	ESCS-402	Elements of Computer Engineering Lab	0	0	4	4	2
9	ESEC-402	Elements of Electronics Engineering Lab	0	0	2	2	1
		Total	12	3	10	25	20

Semester-II A							
S No	Sub Code	Subject Name	L	T	P	Hrs.	Credits
1	BSMA-402	Engineering Mathematics II	3	1	0	4	4
2	BSCH-401	Applied Chemistry	3	1	0	4	4
3	ESME-401	Elements of Mechanical Engineering	2	1	0	3	3
4	ESME-402	Workshop Technology and Practice	1	0	0	1	1
5	HSMC-401	English Communication and Soft Skills	1	0	0	1	1
6	BSCH-402	Applied Chemistry Lab	0	0	2	2	1
7	ESME-403	Elements of Mechanical Engineering Lab	0	0	2	2	1
8	ESME-404	Engineering Drawing	0	0	4	4	2
9	ESME-405	Workshop Technology and Practice Lab	0	0	4	4	2
10	HSMC-402	English Communication and Soft Skills Lab	0	0	2	2	1
11	MCCH-401	Environmental Studies	3	0	0	3	0
		Total	13	3	14	30	20

Semester-IIB							
1	TPIN-421	Practical Training During Summer Vacations (In-house) 02 weeks				40	1 (S/US)
2	TPIN-422	Technical Competency				40	1 (S/US)

Study Scheme UG Programme: B.E. in Artificial Intelligence and Data Science

Semester-III							
S No	Sub Code	Subject Name	L	T	P	Hrs.	Credits
1	BSMA-501	Numerical and Statistical Methods	3	0	0	3	3
2	PCAI-501	Programming for Software Development	3	0	0	3	3
3	PCAI-502	Foundation of Data Science	2	1	0	3	3
4	PCAI-503	Introduction to Data Structures and Algorithms	2	1	0	3	3
5	BSBL-501	Biology for Engineers	2	0	0	2	2
6	MCUG-501	Universal Human Values-II: Understanding Harmony	3	0	0	3	3
7	BSMA-502	Numerical and Statistical Methods Lab	0	0	2	2	1
8	PCAI-504	Programming for Software Development Lab	0	0	2	2	1
9	PCAI-505	Data Science Lab	0	0	4	4	2
10	PCAI-506	Data Structures and Algorithms Lab	0	0	4	4	2
		Total	15	2	12	29	23

Semester-IVA							
S No	Sub Code	Subject Name	L	T	P	Hrs.	Credits
1	ESME-501	Engineering Mechanics	3	1	0	4	4
2	PCAI-507	Fundamentals of Operating System	3	0	0	3	3
3	PCAI-508	Database Systems and Applications	2	1	0	3	3
4	HSMC-501	Principles of Management	3	0	0	3	3
5	PCAI-509	Introduction to Artificial Intelligence	2	1	0	3	3
6	PCAI-510	Operating System Lab	0	0	2	2	1
7	PCAI-511	Database Systems and Applications Lab	0	0	4	4	2
8	PCAI-512	Artificial Intelligence Lab	0	0	2	2	1
9	MCMH-501	Indian Constitution	3	0	0	3	0
		Total	16	3	8	27	20

Semester-IVB							
1	TPID-521	Industrial Training 02 weeks				40	1 (S/US)
2	EAA-521+	Fractional credit course/Extra Academic Activity + GROUP A/B/C				40	1 (S/US)

Study Scheme UG Programme: B.E. in Artificial Intelligence and Data Science

Semester-VA							
S No	Sub Code	Subject Name	L	T	P	Hrs.	Credits
1	PCAI-601	Machine Learning	2	1	0	3	3
2	PCAI-602	Statistical Analysis and Computing	2	1	0	3	3
3	OEAI-601	Open Elective-1	3	0	0	3	3
4	OEAI-602	Open Elective-2	3	0	0	3	3
5	PEAI-601	Professional Elective-1	3	0	0	3	3
6	HSMC-601	Technical Communication	2	0	0	2	2
7	PCAI-603	Machine Learning Lab	0	0	2	2	1
8	PCAI-604	Statistical Analysis and Computing Lab	0	0	2	2	1
9	HSMC-602	Technical Communication Lab	0	0	2	2	1
		Total	15	2	6	23	20

Semester-V B							
1	EAA-611+	Fractional credit course/Extra Academic Activity +GROUP A/B/C				40	1 (S/US)

Semester-VI A							
S No	Sub Code	Subject Name	L	T	P	Hrs.	Credits
1	PCAI-605	Deep Learning	2	1	0	3	3
2	PCAI-606	Computer Networks and Internet Protocol	2	1	0	3	3
3	OEAI-603	Open Elective-3	3	0	0	3	3
4	OEIA-604	Open Elective-4	3	0	0	3	3
5	PEAI-602	Professional Elective-2	3	0	0	3	3
6	HSMC-602	Engineering Economics, Entrepreneurship and Startups	3	0	0	3	3
7	PCAI-607	Deep Learning Lab	0	0	2	2	1
8	PCAI-608	Computer Networks and Internet Protocol Lab	0	0	2	2	1
		Total	16	2	4	22	20

Semester-VI B							
1	TPID-621	Industrial Training 04 weeks				40	2 (S/US)

2	EAA-622+	Fractional credit course/Extra Academic Activity + GROUP A/B/C				40	1 (S/US)
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Study Scheme UG Programme: B.E. in Artificial Intelligence and Data Science

Semester-VII							
S No	Sub Code	Subject Name	L	T	P	Hrs.	Credits
1	PCAI-701	Optimization Techniques	2	1	0	3	3
2	PCAI-702	Introduction to IoT and Embedded Computing	2	0	0	2	2
3	PCAI-703	Cyber Security with AI	2	0	0	2	2
4	PEAI-701	Professional Elective-3	3	0	0	3	3
5	PEAI-702	Professional Elective-4	3	0	0	3	3
6	OEAI-701	Open Elective-5	3	0	0	3	3
7	PCAI-704	Optimization Techniques Lab	0	0	2	2	1
8	PCAI-705	IoT and Embedded Computing Lab	0	0	2	2	1
9	PRAI-701	Project Stage1 and Seminar	0	0	4	4	2
		Total	15	1	8	24	20

Semester-VIII							
S No	Sub Code	Subject Name	L	T	P	Hrs.	Credits
1	PEAI-703	Professional Elective-5	3	0	0	3	3
2	PEAI-704	Professional Elective-6	3	0	0	3	3
3	PRAI-702	Project Stage II	0	0	12	12	6
		Total	6	0	12	18	12
OR							
S No	Sub Code	Subject Name	L	T	P	Hrs.	Credits
1	INID-721	Internship in Industry					6
2	PRAI-702	Project Stage II	0	0	12	12	6
		Total	0	0	12	12	12

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LIST OF OPEN ELECTIVES							
S. No	Sub. Code	Subject Name	L	T	P	Hrs.	Credits
1		Open Elective-I	3	0	0	3	3
	OEAI-601A	Statistical Thinking for Data Science	3	0	0	3	3
	OEAI-601B	Artificial Intelligence for Engineers	3	0	0	3	3
	OEAI-601C	Cyber Laws and Ethics	3	0	0	3	3
	OEAI-601D	Software Engineering	3	0	0	3	3
	OEAI-601E	Computer Graphics	3	0	0	3	3
2		Open Elective-II	3	0	0	3	3
	OEAI-602A	Information Retrieval	3	0	0	3	3
	OEAI-602B	Applications of Artificial Intelligence in Healthcare	3	0	0	3	3
	OEAI-602C	Cyber Security	3	0	0	3	3
	OEIA-602D	Software Project Management	3	0	0	3	3
	OEIA-602E	Multimedia and Animation	3	0	0	3	3
3		Open Elective-III	3	0	0	3	3
	OEAI-603A	Big Data Analytics	3	0	0	3	3
	OEIA-603B	Solve Business Problems with Artificial Intelligence	3	0	0	3	3
	OEAI-603C	Cyber Forensics	3	0	0	3	3
	OEAI-603D	Requirement Engineering	3	0	0	3	3
	OEAI-603E	Image Processing	3	0	0	3	3
4		Open Elective-IV	3	0	0	3	3
	OEAI-604A	Techniques of Data Mining	3	0	0	3	3
	OEAI-604B	Artificial Intelligence in Gaming	3	0	0	3	3
	OEAI-604C	Adhoc and Wireless Sensor Networks	3	0	0	3	3
	OEAI-604D	Object Oriented Analysis and Design	3	0	0	3	3
	OEAI-604E	Simulation and Modeling	3	0	0	3	3

5		Open Elective-V	3	0	0	3	3
	OEAI-701A	Web Technologies for Advanced Data Visualization	3	0	0	3	3
	OEAI-701B	Artificial Intelligence in Finance	3	0	0	3	3
	OEAI-701C	Cyber Threat Intelligence	3	0	0	3	3
	OEAI-701D	Software Reliability and Testing	3	0	0	3	3
	OEAI-701E	Digital Signal Processing	3	0	0	3	3

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LIST OF PROFESSIONAL ELECTIVES							
Sr.No	Sub. Code	Subject Name	L	T	P	Hrs.	Credits
1		Professional Elective-I					
	PEAI-601A	Information Retrieval	3	0	0	3	3
	PEAI-601B	Applied Artificial Intelligence	3	0	0	3	3
	PEAI-601C	Soft Computing	3	0	0	3	3
2		Professional Elective-II					
	PEAI-602A	Natural Language Processing	3	0	0	3	3
	PEAI-602B	Applications of Artificial Intelligence in Healthcare	3	0	0	3	3
	PEAI-602C	Data Mining	3	0	0	3	3
3		Professional Elective-III					
	PEAI-701A	Data Analytics & Visualization	3	0	0	3	3
	PEAI-701B	Generative Artificial Intelligence	3	0	0	3	3
	PEAI-701C	Pattern and visual recognition	3	0	0	3	3
4		Professional Elective-IV					
	PEAI-702A	Big Data Analytics	3	0	0	3	3
	PEAI-702B	Artificial Intelligence in Cloud	3	0	0	3	3
	PEAI-702C	Artificial Neural Networks	3	0	0	3	3
5		Professional Elective-V					
	PEAI-703A	Technologies for Advanced Data Visualization	3	0	0	3	3
	PEAI-703B	Responsible and Ethical Artificial Intelligence	3	0	0	3	3
	PEAI-703C	Advanced Deep Learning	3	0	0	3	3
6		Professional Elective-VI					
	PEAI-704A	Bioinformatics	3	0	0	3	3
	PEAI-704B	Edge Artificial Intelligence and Robotics	3	0	0	3	3
	PEAI-704C	Computer Vision	3	0	0	3	3