

Rayat Shikshan Sanstha's
**Karmaveer Bhaurao Patil,
College of Engineering,
Satara.**

An Autonomous Institute & Affiliated to DBATU Lonere

Accredited by NAAC with "B++" Grade



Second Year to Final Year B. Tech
ARTIFICIAL INTELLIGENCE &
DATA SCIENCE

Structure & Curriculum

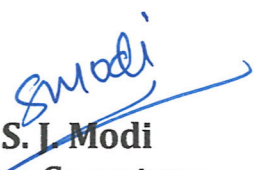
(w.e.f. A.Y. 2026-27)

As Per NEP 2020

NCrF Level 6

Recommended in BOS (AIDS) Meeting Dated: 04th July 2026
&
Approved in Academic Council Meeting Dated: 20th July 2026


Dr. G. D. Dangat
BOS Chairman(AIDS)


Dr. S. I. Modi
Member Secretary
Academic Council


Dr. A. C. Attar
Principal

Rayat Shikshan Sanstha's

**KARMAVEER BHAURAO PATIL COLLEGE OF ENGINEERING,
SATARA**

**(An Autonomous Institute and Affiliated to Dr. Babasaheb Ambedkar
Technological University, Lonere)**

Accredited by NAAC & NBA



**DEPARTMENT OF ARTIFICIAL INTELLIGENCE &
DATA SCIENCE**

STRUCTURE AND CURRICULUM

For

Bachelor of Technology In

ARTIFICIAL INTELLIGENCE & DATA SCIENCE

(w.e.f. Academic Year 2026-2027)

As per NEP 2020





Rayat Shikshan Sanstha's

KARMAVEER BHAURAO PATIL COLLEGE OF ENGINEERING, SATARA

An Autonomous Institute

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Affiliated to Dr. Babasaheb Ambedkar Technological University, Lonere – from 2017

Department of Artificial Intelligence & Data Science

KEY FEATURES OF CURRICULUM

1. Multiple entry and exit option after every year.
2. Provision for Open Electives (OE), Vocational and Skill Enhancement Courses (VSE), Ability Enhancement Courses (AE), Indian Knowledge System (IKS), Value Education Courses (VE), Co-Curricular Courses (CC) in addition to program core courses.
3. Mandatory internship of one semester.
4. Credits for Value education courses, Ability Enhancement Courses, Co-Curricular Curricular activities.
5. Mandatory Non-Credit Courses.
6. Interdisciplinary and multidisciplinary education through single and double minors and open electives.
7. Skill based courses and multiple exit level.
8. Provision for learning in online mode through Swayam / NPTEL etc courses
9. Provision for B.Tech. Honours with Research degree through research project.
10. Opportunity for learner to choose courses of their interest in all disciplines.
11. Provision of Skill Based Courses and internship/Field project/mini projects for exit options at each level.
12. Flexibility for all types of learners





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Department of Artificial Intelligence & Data Science

Degree	Total Credits
Four year Bachelor of Technology (B.E./B.Tech. or Equivalent) in Engineering/Technology with Multidisciplinary Minor	Proposed Total Credits: 172
AND	
Four Year Bachelor's Degree (B.E./B.Tech. or Equivalent) in Engineering/Technology – Honors and Multidisciplinary Minor	18–20 additional credits over and above the credit requirement of the regular B.Tech. Degree. Total 192-194 Credits
OR	
Four Year Bachelor's Degree (B.E./B.Tech. or Equivalent) in Engineering/Technology – Honors with Research and Multidisciplinary Minor	
OR	
Four Year Bachelor's Degree (B.E./B.Tech. or Equivalent) in Engineering/Technology – Major Engineering Discipline with Double Minors (Multidisciplinary Minor and Specialization Minor)	

TABLE NO.1:





Rayat Shikshan Sanstha's
KARMAVEER BHAURAO PATIL COLLEGE OF ENGINEERING, SATARA
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Department of Artificial Intelligence & Data Science

CREDIT DISTRIBUTION FOR EACH YEAR AND EXIT OPTION

NCrF Level	Year/ Sem	Exit Option	Minimum Credit Requirements	Maximum Credit Requirements	KBPCOES AI&DS Credits	Addition al Credits for exit students	KBPCOES AI&DS Total Credits
4.5	I&II	U. G. Certificate	40	44	42	8	50
5	II&IV	U. G. Diploma	80	88	86	8	94
5.5	V&VI	B. Vocational /B.Sc.	120	132	130	8	138
6	VII& VIII	B. Tech. Major with Multidisciplinary Minor	160	176	172	-	172
6	VII & VIII	B.Tech. Honors and Multidisciplinary Minor	180	194	172	18	190
		B.Tech. Honors with Research and Multidisciplinary Minor	180	194	172	18	190
		B.Tech. with Double Minor (Multidisciplinary and Specialization Minor)	180	194	172	18	190

TABLE NO. 2: CREDIT DISTRIBUTION FOR EACH YEAR AND EXIT OPTION





Rayat Shikshan Sanstha's
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CURRICULUM FRAMEWORK

List of Abbreviations

Sr. No.	Abbreviation	Type of Course
1	BSC	Basic Science Course
2	ESC	Engineering Science Course
3	PCC	Programme Core Course
4	PEC	Programme Elective Course
5	MDM	Multidisciplinary Minor
6	OE	Open Elective
7	VSEC	Vocational and Skill Enhancement Course
8	AEC	Ability Enhancement Course
9	EEMC	Entrepreneurship/Economics/Management Course
10	IKS	Indian Knowledge System
11	VEC	Value Education Course
12	CC	Co-Curricular Courses
13	RM	Research Methodology
14	CEP/FP	Community Engineering. Project/Field Project
15	PR	Project
16	IT/OJT	Internship/On job training

TABLE NO. 3: LIST OF ABBREVIATIONS





Rayat Shikshan Sanstha's
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Department of Artificial Intelligence & Data Science

SEMESTER-WISE CREDIT DISTRIBUTION

Course Category	As per NEP GR	KBPCOES Credits	Course Category	As per NEP GR	KBPCOES Credits
BSC/ESC	30	30	BSC	14-18	16
			ESC	16-12	14
Program Courses	64-76	74	PCC	44-56	54
			PEC	20	20
Multidisciplinary Courses	22	22	MDM	14	14
			OE	8	8
Skill Courses	8	8	VSEC	8	8
Humanities, Social Science & Management (HSSM)	14	14	AEC	4	4
			EEMC	4	4
			IKS	2	2
			VEC	4	4
Experiential Courses	22	22	RM	4	4
			EL	2	2
			PR	4	4
			IN/OJT	12	12
Liberal Learning Courses	4	2	CC	2	2
Total Credits	160-176	172		160-176	172

TABLE NO. 4: SEMESTER-WISE CREDIT DISTRIBUTION





Rayat Shikshan Sanstha's
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KBPCOES Credit Distribution Breakdown

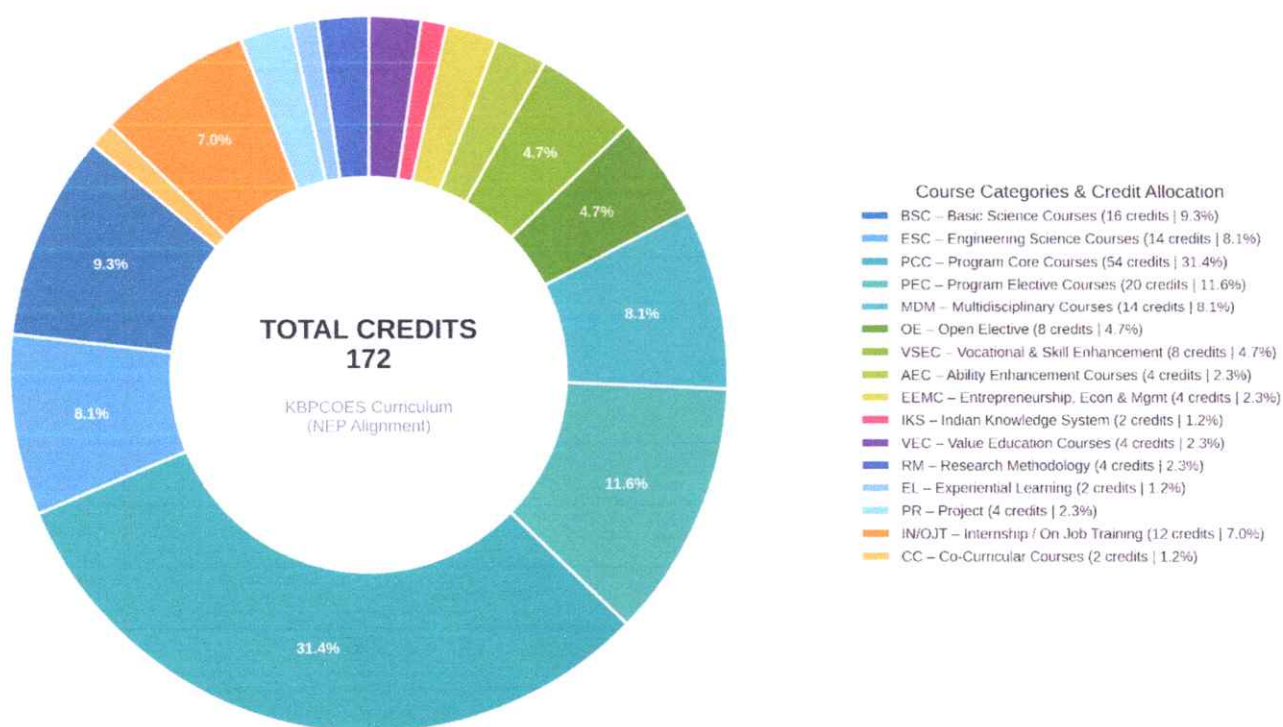


FIGURE NO.1: CREDIT DISTRIBUTION CHART

SEMESTER-WISE CREDIT DISTRIBUTION





Rayat Shikshan Sanstha's
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	Semester	I	II	III	IV	V	VI	VII	VIII	Total Credits	%
Basic Science Course	BSC/ESC	7	7	-	-	-	-	-	-	14	8.14
Engineering Science Course		8	7	-	-	-	-	-	-	15	8.72
Programme Core Course (PCC)	Program Courses	-	2	10	10	12	10	6	4	54	31.40
Programme Elective Course (PEC)		-	-	-	-	4	8	6	2	20	11.63
Multidisciplinary Minor (MDM)	Multidisciplinary Courses	-	-	2	3	3	2	4	-	14	8.14
Open Elective (OE) Other than a particular program		-	-	3	2	3	-	-	-	8	4.65
Vocational and Skill Enhancement Course (VSEC)	Skill Courses	2	2	-	2		2	-	-	8	4.65
Ability Enhancement Course (AEC -01, AEC-02)	Humanities Social Science and Management (HSSM)	3	-	-	2	-	-	-	-	5	2.90
Entrepreneurship/ Economics/ Management Courses		-	-	2	2	-	-	-	-	4	2.33
Indian Knowledge System (IKS)		-	2	-	-	-	-	-	-	2	1.15
Value Education Course (VEC)		-	-	2	2	-	-	-	-	4	2.33
Research Methodology	Experiential Learning Courses	-	-	-		-	-	4		4	2.33
Comm. Engg. Project (CEP)/Field Project (FP)		-	-	2		-	-	-	-	2	1.16
Project		-	-	-	-	-	-	4		4	2.33
Internship/ OJT		-	-	-	-	-	-	-	12	12	6.98
Co-curricular Courses (CC)	Courses	1	1	-	-	-	-	-	-	2	1.16
Total Credits (Major)		21	21	21	23	22	22	22	18	172	100

TABLE NO. 5: SEMESTER-WISE CREDIT DISTRIBUTION





Rayat Shikshan Sanstha's
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Semester-wise Basket Themes for Emerging Technology Specialization

Bucket	Course	Course Code	Suggested Theme Name
Bucket	Indian Knowledge System (IKS)	26BSHA209A / 26BSHB109A	1. Indian Knowledge System In Architecture And Town Planning
		26BSHA209B / 26BSHB109B	2. Indian Ethics
		26BSHA209C / 26BSHB109C	3. Indian Astronomy





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General Instructions

- In the eighth semester, students must complete a mandatory internship for one semester at a company or organization approved by the BOS Chairman.
- During the eighth-semester internship, students must complete theory courses through one of the two modes:
 - Online mode, where courses are offered through SWAYAM/NPTEL or an equivalent platform, providing an evaluation mechanism approved by the BOS Chairman. In this case:
 - Students can register and complete these online courses any time after the beginning of the third semester.
 - The course must be completed and the scorecard/certificate submitted before the declaration of the eighth-semester result.
 - If a student fails an online course, they must register for the same course offered by the institute and appear for ESE examination of 100 marks only personally as per the schedule declared by the institute to successfully complete the course.
 - Self-study mode, where students study independently using the course offered by the institute.
 - Students must appear for all college assessments/examinations (ISE, MSE, ESE) personally as per the institute's schedule and successfully complete the course.
 - In addition to program-specific courses, students must complete vocational skill courses, internships, and field projects connected to their major degree.

Exit Options:

- The exit option is available at the end of even semesters (2nd, 4th, and 6th semesters), commencing from the academic year 2027-28 for the UG Certificate.
- Students opting for exit at any level (odd or even semesters) must earn an additional eight credits in skill-based vocational courses, internships, apprenticeships, or mini-projects before exiting.





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- This makes them eligible for a UG Certificate, UG Diploma, or B.Voc./B.Sc. Engineering degree, depending on their qualification level.

Re-entry and Lateral Entry:

- Students opting for exit after an even semester may re-enter within four years and resume from the next odd semester they left off.
- There must be a gap of at least one year between exit and re-entry.
- Students opting for exit after an odd semester (1st, 3rd, 5th, or 7th) may only re-enter the program during the next even semester.
- There must be a gap of at least one year between exit and re-entry

Maximum Duration for Degree Completion:

- The B.Tech degree must be completed within eight years from the date of admission to the first-year undergraduate program.
- The duration includes exit, withdrawal, absence, or permissible leaves but excludes rustication periods.
- If exceptional cases arise, valid reasons may be presented to the Academic Council, which may approve an extension of one additional year.
- Eligibility for Admission to UG Bachelor's Degree with Honors, Research, or Double Minor:
- Students must have a minimum CGPA of 7.5 with no backlogs at the end of the second semester and must have earned 18 credits.

Multiple Exit Qualification Titles & Requirements:

- Exit-1 (NCrF Level 4.5) – One-Year UG Certificate in Engineering/Technology (Requires 8 additional credits by 2-Month internship /Technical Project/Industrial Training or equivalent skill courses).
- Exit-2 (NCrF Level 5.0) – Two-Year UG Diploma in Engineering/Technology (Requires 8 additional credits by 2-Month internship /Technical Project/Industrial Training or equivalent skill courses).
- Exit-3 (NCrF Level 5.5) – Three-Year B.Voc/B.Sc. Engineering Degree (Requires 8 additional credits by 2-Month internship /Technical Project/Industrial Training or equivalent skill courses).





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Department of Artificial Intelligence & Data Science

MULTIPLE EXIT OPTIONS

Option	NCrF Level	Qualification Title	Additional Credit Requirement	Bridge Courses
Exit-1	4.5	One-Year UG Certificate Course in Engineering/Technology	8	2 Months Internship / Technical Project/Industrial Training OR Online Two Skill Courses from NSQF/ESSC/Any Other Agency certification approved by BoS
Exit-2	5.0	Two-Year UG Diploma in Engineering/Technology	8	2 Months Internship / Technical Project/Industrial Training OR Online Two Skill Courses at Diploma Level from NSQF/ESSC/Any Other Agency certification approved by Bos
Exit-3	5.5	Three-Year Bachelor Degree in Vocation (B.Voc.) or B.Sc. (Engineering/Technology)	8	2 Months Internship / Technical Project/Industrial Training OR Online Two Skill Courses at Degree Level from NSQF/ESSC/Any Other Agency certification approved by Bos

TABLE NO. 6: MULTIPLE EXIT OPTIONS





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Department of Artificial Intelligence & Data Science

Curriculum Structure

of

First Year B.Tech.[Common to All]

Effective from

Academic Year 2026-27





Rayat Shikshan Sanstha's
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Department of Artificial Intelligence & Data Science

First Year B. Tech. Common to All
(W.E.F. 2026-27)

Group A SEMESTER -I

Sr. No	Course Category	Course Code	Course Name	Teaching Scheme (Weekly Hour)				Cr	Evaluation Scheme (Weightage in Marks)			
				L	T	P	S		ISE	MSE	ESE/ POE	Total
1	Basic Science Course (BSC)	26BSH101	Engineering Mathematics – I	3	-	-	1	3	10	30	60	100
2	Basic Science Course (BSC)	26BSHA102	Engineering Chemistry	3	-	-	1	3	10	30	60	100
3	Engineering Science Course (ESC)	26BSHA103	Engineering Mechanics	3	-	-	1	3	10	30	60	100
4	Engineering Science Course(ESC)	26BSHA104	Basic Mechanical Engnccring	2	-	-	1	2	10	30	60	100
5	Ability Enhancement Course (AEC-01)	26BSHA105	Communication Skills	2	-	-	1	2	10	30	60	100
6	Basic Science Course BSC	26BSHA106	Engineering Chemistry Lab	-	-	2	-	1	60	-	40	100
7	Engineering Science Course (ESC)	26BSHA107	Engineering Mechanics Lab	-	-	2	-	1	60	-	40	100
8	Engineering Science Course (ESC)	26BSHA108	Python Programming Lab	-	-	4	-	2	60	-	40	100
9	Vocational and Skill Enhancement Course (VSEC)	26BSHA109	Workshop Practices-I	-	-	4	-	2	60	-	40	100
10	Ability Enhancement Course (AEC-01)	26BSHA110	Communication Skills Lab	-	-	2	-	1	60	-	40	100
11	Co-curricular Courses (CC)	26BSHA111A	Sports &Physical Education	-	-	2	-	1	60	-	40	100
		26BSHA111B	Music & Dance									
		26BSHA111C	Yoga Education									
			Total	13	-	16	5	21	410	150	540	1100

Legends: L-Lecture, T-Tutorial, P-Practical, Cr-Credits S-Self Study

Total Contact Hours/Week: 29
ISE: In Semester Evaluation

-Cumulative Credits: 21+21=42
-ESE: End Semester Examination





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First Year B. Tech. Common to All
(W.E.F. 2026-27)

Group A SEMESTER -II

Sr. No	Course Category	Course Code	Course Name	Teaching Scheme (Weekly Hour)				Cr	Evaluation Scheme (Weightage in Marks)			
				L	T	P	S		ISE	MSE	ESE/ POE	Total
1	Basic Science Course (BSC)	26BSH201	Engineering Mathematics – II	3	-	-	1	3	10	30	60	100
2	Basic Science Course (BSC)	26BSHA202	Engineering Physics	3	-	-	1	3	10	30	60	100
3	Engineering Science Course (ESC)	26BSHA203	Engineering Graphics	3	-	-	1	3	10	30	60	100
4	Engineering Science Course(ESC)	26BSHA204	Basic Civil Engineering	2	-	-	1	2	10	30	60	100
5	Basic Science Course (BSC))	26BSHA205	Engineering Physics Lab	-	-	2	-	1	60	-	40	100
6	Engineering Science Course(ESC)	26BSHA206	Engineering Graphics Lab	-	-	4	-	2	60	-	40	100
7	Programme Core Course (PCC)	26BSHA207	Basics in AI-I-RA Lab	-	-	4	-	2	60	-	40	100
8	Vocational and Skill Enhancement Course (VSEC)	26BSHA208	Design Thinking	-	-	4	-	2	60	-	40	100
9	Indian Knowledge System (IKS)	26BSHA209	IKS Bucket #	2	-	0	-	2	60	-	40	100
10	Co-curricular Courses (CC)	26BSHA210A	Integrated Personality Development	-	-	2	-	1	60	-	40	100
		26BSHA210B	Health and Wellness									
		26BSHA210C	Social Outreach Activities									
				13	-	16	4	21	400	120	480	1000

Legends: L-Lecture, T-Tutorial, P-Practical, Cr-Credits S-Self Study

Total Contact Hours/Week: 29
ISE: In Semester Evaluation



-Cumulative Credits:21+21=42
-ESE: End Semester Examination



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First Year B. Tech. Common to All
(W.E.F. 2026-27)

Group B SEMESTER -I

Sr. No	Course Category	Course Code	Course Name	Teaching Scheme (Weekly Hour)				Cr	Evaluation Scheme (Weightage in Marks)			
				L	T	P	S		ISE	MSE	ESE/ POE	Total
1	Basic Science Course (BSC)	26BSH101	Engineering Mathematics – I	3	-	-	1	3	10	30	60	100
2	Basic Science Course (BSC)	26BSHB102	Engineering Physics	3	-	-	1	3	10	30	60	100
3	Engineering Science Course (ESC)	26BSHB103	Engineering Graphics	3	-	-	1	3	10	30	60	100
4	Engineering Science Course (ESC)	26BSHB104	Basic Civil Engineering	2	-	-	1	2	10	30	60	100
5	Basic Science Course (BSC)	26BSHB105	Engineering Physics Lab	-	-	2	-	1	60	-	40	100
6	Engineering Science Course (ESC)	26BSHB106	Engineering Graphics Lab	-	-	4	-	2	60	-	40	100
7	Programme Core Course (PCC)	26BSHB107	Basics in AI-I-RA Lab	-	-	4	-	2	60	-	40	100
8	Vocational and Skill Enhancement Course (VSEC)	26BSHB108	Design Thinking	-	-	4	-	2	60	-	40	100
9	Indian Knowledge System (IKS)	26BSHB109	IKS Bucket #	2	-	0	-	2	60	-	40	100
10	Co-curricular Courses (CC)	26BSHB110A	Integrated Personality Development	-	-	2	-	1	60	-	40	100
		26BSHB110B	Health and Wellness									
		26BSHB110C	Social Outreach Activities									
				13	-	16	4	21	400	120	480	1000

Legends: L-Lecture, T-Tutorial, P-Practical, Cr-Credits S-Self Study

Total Contact Hours/Week: 29
ISE: In Semester Evaluation

-Cumulative Credits:21+21=42
-ESE: End Semester Examination





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First Year B. Tech. Common to All
(W.E.F. 2026-27)

Group B SEMESTER -II

Sr. No	Course Category	Course Code	Course Name	Teaching Scheme (Weekly Hour)				Cr	Evaluation Scheme (Weightage in Marks)			
				L	T	P	S		ISE	MSE	ESE/ POE	Total
1	Basic Science Course (BSC)	26BSH201	Engineering Mathematics – II	3	-	-	1	3	10	30	60	100
2	Basic Science Course (BSC)	26BSHB202	Engineering Chemistry	3	-	-	1	3	10	30	60	100
3	Engineering Science Course (ESC)	26BSHB203	Engineering Mechanics	3	-	-	1	3	10	30	60	100
4	Engineering Science Course(ESC)	26BSHB204	Basic Mechanical Engineering	2	-	-	1	2	10	30	60	100
5	Ability Enhancement Course(AEC-01)	26BSHB205	Communication Skills	2	-	-	1	2	10	30	60	100
6	Basic Science Course BSC	26BSHB206	Engineering Chemistry Lab	-	-	2	-	1	60	-	40	100
7	Engineering Science Course (ESC)	26BSHB207	Engineering Mechanics Lab	-	-	2	-	1	60	-	40	100
8	Engineering Science Course (ESC)	26BSHB208	Python Programming Lab	-	-	4	-	2	60	-	40	100
9	Vocational and Skill Enhancement Course (VSEC)	26BSHB209	Workshop Practices-I	-	-	4	-	2	60	-	40	100
10	Ability Enhancement Course(AEC-01)	26BSHB210	Communication Skills Lab	-	-	2	-	1	60	-	40	100
11	Co-curricular Courses (CC)	26BSHB211A	Sports &Physical Education	-	-	2	-	1	60	-	40	100
		26BSHB211B	Music & Dance									
		26BSHB211C	Yoga Education									
			Total	13	-	16	5	21	410	150	540	1100

Legends: L-Lecture, T-Tutorial, P-Practical, Cr-Credits S-Self Study

Total Contact Hours/Week: 29
ISE: In Semester Evaluation

-Cumulative Credits: 21+21=42
-ESE: End Semester Examination





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UG Certificate Level

Exit Course after Semester -II of Engineering

(UG Certificate Course in Engineering /Technology

Course Category	Course Code	Name of Course	Weekly Teaching Scheme			Evaluation Scheme				Credit
			L	T	P	ISE	MSE	ESE	Total	
Exit	BSHEX01	Computer Hardware Basics Skill India Digital Hub (SIDH) - Upskilling, reskilling, career growth and lifelong learning				120	00	80	200	8
	OR									
	BSHEX01	Industrial Training for 2 Month				120	00	80	200	8
Total Contact Hrs. : 48 to 64										08





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Department of Artificial Intelligence & Data Science

Curriculum Structure

Of

Second Year B. Tech. in

Artificial Intelligence & Data Science

Effective from Academic Year 2027-2028





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SECOND YEAR B. TECH. IN
ARTIFICIAL INTELLIGENCE & DATA SCIENCE SEMESTER-III (W.E.F. 2027-28)

SEMESTER-III											
Course Category & Credit	Course Code	Name of Course	Teaching Scheme (Weekly Hours)				Cr	Evaluation Scheme (Weightage in Marks)			
			L	T	P	S		ISE	MSE	ESE/ POE	Total
PCC (10)	27101PCC301	Data Structure	3	-	-	-	3	10	30	60	100
	27101PCC302	Database Management System	2	-	-	-	2	10	30	60	100
	27101PCC303	Artificial Intelligence	2	-	-	1	2	10	30	60	100
	27101PCC304L	Data Structure Lab	-	-	2	-	1	60	-	40	100
	27101PCC305L	Database Management System Lab	-	-	2	-	1	60	-	40	100
	27101PCC306L	Artificial Intelligence Lab	-	-	2	-	1	60	-	40	100
MDM	27101MDM307	Multidisciplinary Minor -I	2	-	-	-	2	10	30	60	100
OE	27101OE308	Open Elective-I	3	-	-	-	3	10	30	60	100
EEMC	27101EEMC309	Innovation & Prototype of IPR	2	-	-	-	2	50	-	-	50
VEC	27101VEC310	Universal Human Values	2	-	-	-	2	50	-	-	50
CEP/ FP	27101CEFP311	Reasoning and Aptitude developing	-	-	4	-	2	60	-	40	100
Total			16	0	10	01	21	390	150	460	1000
Total Contact Hours: 26											

TABLE NO. 6: CURRICULUM STRUCTURE OF SECOND YEAR B. TECH (SEM-III)

ISE – In Semester Evaluation, ESE – End Semester Examination, MSE – Mid Semester Examination, L-Lecture, T-Tutorial, P-Practical.

CUMULATIVE CREDITS: 42 + 21 = 63





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SECOND YEAR B. TECH. IN ARTIFICIAL INTELLIGENCE & DATA SCIENCE SEMESTER-IV (W.E.F. 2027-28)

SEMESTER-IV											
Course Category	Course Code	Name of Course	Teaching Scheme (Weekly Hours)				Cr	Evaluation Scheme (Weightage in Marks)			
			L	T	P	S		ISE	MSE	ESE/POE	Total
PCC	27101PCC401	Operating Systems	2	-	-	1	2	10	30	60	100
	27101PCC402	Data Analytics	3	-	-	1	3	10	30	60	100
	27101PCC403	Software Engineering	2	-	-	1	2	10	30	60	100
	27101PCC404L	Web Development Lab	1	-	2	-	2	60	-	40	100
	27101PCC405L	Data Analytics Lab	-	-	2	-	1	60	-	40	100
MDM	27101MDM406	Multidisciplinary Minor -II	3	-	-	-	3	10	30	60	100
OE	27101OE407	Open Elective-II	2	-	-	-	2	10	30	60	100
AEC	27101AEC408	Quantitative Aptitude & Logical Reasoning	2	-	-	-	2	50	-	-	50
VEC	27101VEC409	Ethics and responsible use of AI	2	-	-	-	2	50	-	-	50
EEMC	27101EEMC410	Entrepreneurship and Start-up ecosystem	2	-	-	-	2	50	-	-	50
VSEC	27101VSEC411	Object oriented programming using java	18	-	4	-	2	60	-	40	100
Total			18	00	08	03	23	380	150	420	950
Total Contact Hours: 26											

TABLE NO. 7: CURRICULUM STRUCTURE OF SECOND YEAR B. TECH (SEM-IV)

ISE – In Semester Evaluation, ESE – End Semester Examination, MSE – Mid Semester





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CUMULATIVE CREDITS: 63 + 23 = 86

UG DIPLOMA LEVEL
EXIT COURSE AFTER SEM -IV OF ENGINEERING
(UG DIPLOMA IN ENGINEERING /TECHNOLOGY)

Course Category	Course Code	Name of Course	Teaching Scheme (Weekly Hours)			Cr	Evaluation Scheme (Weightage in Marks)			
			L	T	P		ISE	MSE	ESE/POE	Total
Exit	27101Ex412	Internship or Technical Project	-	-	16	8	120	00	80	200
	OR									
	27101Ex413	Data Engineering Using Excel	-	-	16	8	120	00	80	200
Total Contact Hr.08										

TABLE NO. 8: UG DIPLOMA LEVEL EXIT COURSE AFTER SEM -IV OF ENGINEERING





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Curriculum Structure

Of

Third Year B. Tech. in

Artificial Intelligence & Data Science

Effective from Academic Year 2028-2029





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THIRD YEAR B. TECH. IN ARTIFICIAL INTELLIGENCE & DATA SCIENCE SEMESTER-V (W.E.F. 2028-29)

SEMESTER-V											
Course Category	Course Code	Name of Course	Teaching Scheme (Weekly Hours)				Cr	Evaluation Scheme (Weightage in Marks)			
			L	T	P	S		ISE	MSE	ESE/POE	Total
PCC	28101PCC501	Machine Learning	3	-	-	1	3	10	30	60	100
	28101PCC502	Natural Language Processing	3	-	-	1	3	10	30	60	100
	28101PCC503	Computer Network	3	-	-	1	3	10	30	60	100
	28101PCC504L	Machine Learning Lab	-	-	4		2	60	-	40	100
	28101PCC505L	Mobile Application Development Lab	-	-	2	-	1	60	-	40	100
PEC	28101PEC506	Program Elective Course – I	3	-	-	1	3	10	30	60	100
	28101PEC507L	Program Elective Course – I(Lab)	-	-	2	-	1	60	-	40	100
MDM	28101MDM508	Multidisciplinary Minor –III	3	-	-	-	3	10	30	60	100
OE	28101OE509	Open Elective-III	3	-	-	-	2	10	30	60	100
Total			18	0	8	4	22	240	180	480	900
Total Contact Hours: 26											

TABLE NO. 9: CURRICULUM STRUCTURE OF THIRD YEAR B. TECH (SEM-V)

ISE – In Semester Evaluation, ESE – End Semester Examination, MSE – Mid Semester Examination,
L-Lecture, T-Tutorial, P-Practical, S – Self Study

CUMULATIVE CREDITS: 86+ 22 = 108





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LIST OF PROGRAMME ELECTIVE COURSES (PEC) - I

Course Category	Course Code	Name of Course
PEC	28101PEC506	Program Elective Course – I A. Cryptography & Network Security B. Speech Recognition & Processing C. Internet of Things
PEC	201PEC507L	Program Elective Course – I(Lab) A. Cryptography & Network Security Lab B. Speech Recognition & Processing Lab C. Internet of Things Lab

TABLE NO. 10: LIST OF PROGRAMME ELECTIVE COURSES (PEC) - I





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THIRD YEAR B. TECH. IN ARTIFICIAL INTELLIGENCE & DATA SCIENCE SEMESTER-VI (W.E.F. 2028-29)

SEMESTER-VI											
Course Category	Course Code	Name of Course	Teaching Scheme (Weekly Hours)				Cr	Evaluation Scheme (Weightage in Marks)			
			L	T	P	S		ISE	MSE	ESE/POE	Total
PCC	28101PCC601	Deep Learning	3	1	-	1	4	10	30	60	100
	28101PCC602	Cloud Computing	3	1	-	1	4	10	30	60	100
	28101PCC603L	Deep Learning Lab	-	-	2	-	1	60	-	40	100
	28101PCC604L	Cloud Computing Lab	-	-	2	-	1	60	-	40	100
PEC	28101PEC605	Program Elective Course – II	3	-	-	1	3	10	30	60	100
	28101PEC606L	Program Elective Course – II (Lab)	-	-	2	-	1	60	-	40	100
	28101PEC607	Program Elective-III	3	-	-	1	3	10	30	60	100
	28101PEC608L	Program Elective-III (Lab)	-	-	2	-	1	60	-	40	100
MDM	28101MDM609	Multidisciplinary Minor –IV	2	-	-	-	2	10	30	60	100
VSEC	28101VSEC610	Mini Project	-	-	4	-	2	60	-	40	100
Total			14	02	12	04	22	350	150	500	1000
Total Contact Hours: 28											

TABLE NO.11: CURRICULUM STRUCTURE OF THIRD YEAR B. TECH (SEM-VI)

ISE – In Semester Evaluation, ESE – End Semester Examination, MSE – Mid Semester Examination, L-Lecture, T-Tutorial, P-Practical.





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LIST OF PROGRAMME ELECTIVE COURSES (PEC) - II

Course Category	Course Code	Name of Course
PEC	28101PEC605	Program Elective Course – II A. AI for Cyber Security B. Large Language Models and Prompt Engineering C. IoT Security & Privacy
PEC	28101PEC606L	Program Elective Course – II (Lab) A. AI for Cyber Security Lab B. Large Language Models and Prompt Engineering Lab C. IoT Security & Privacy Lab

TABLE NO.11: LIST OF PROGRAMME ELECTIVE COURSES (PEC) – II

LIST OF PROGRAMME ELECTIVE COURSES (PEC) - III

Course Category	Course Code	Name of Course
PEC	28101PEC607	Program Elective-III A. Ethical Hacking & Penetration Testing B. Conversational AI & Intelligent Virtual Assistants C. Industrial Internet of Things (IIoT)
PEC	28101PEC608L	Program Elective-III (Lab) A. Ethical Hacking & Penetration Testing Lab B. Conversational AI & Intelligent Virtual Assistants Lab C. Industrial Internet of Things (IIoT) Lab

TABLE NO.12: LIST OF PROGRAMME ELECTIVE COURSES (PEC) – III





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UG DEGREE LEVEL (5.5)
EXIT COURSE AFTER SEM VI

(Bachelor Degree in Vocation (B.Voc.) or B.Sc. in Engineering /Technology)

Course Category	Course Code	Name of Course	Teaching Scheme (Weekly Hours)			Cr	Evaluation Scheme (Weightage in Marks)			
			L	T	P		ISE	MSE	ESE/P OE	Total
Exit	28101ex611	Internship or Technical Project	-	-	16	8	120	00	80	200
	OR									
	28101ex612	Full Stack Development	-	-	16	8	120	00	80	200
Total Contact Hr.16										

TABLE NO.13: UG DEGREE LEVEL (5.5) EXIT COURSE AFTER SEM VI





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FINAL YEAR B. TECH. IN

ARTIFICIAL INTELLIGENCE & DATA SCIENCE SEMESTER-VII (W.E.F. 2029-30)

SEMESTER-VII											
Course Category	Course Code	Name of Course	Teaching Scheme (Weekly Hours)				Cr	Evaluation Scheme (Weightage in Marks)			
			L	T	P	S		ISE	MSE	ESE/POE	Total
PCC	29101PCC701	Generative AI	3	-	-	1	3	10	30	60	100
	29101PCC702L	Generative AI Lab	-	-	2	-	1	60	-	40	100
	29101PCC703L	Agentic AI	1	-	2	-	2	60	-	40	100
PEC	29101PEC704	Program Elective Course –IV	3	-	-	1	3	10	30	60	100
	29101PEC705	Program Elective Course –V	3	-	-	1	3	10	30	60	100
RM	29101RM706	Research Methodologies	3	-	-	1	3	10	30	60	100
	29101RM707L	Research Methodologies Lab	-	-	2	1	1	60	-	40	100
MDM	29101MDM708	Multidisciplinary Minor –V	-	-	8	-	4	10	30	60	100
PR	29101PR709	Project	-	-	8	-	4	60	-	40	100
Total			13	0	22	5	24	290	150	460	900
Total Contact Hours: 35											

TABLE NO.14: CURRICULUM STRUCTURE OF FINAL YEAR B. TECH (SEM-VII)

ISE – In Semester Evaluation, ESE – End Semester Examination, MSE – Mid Semester Examination, L-Lecture, T-Tutorial, P-Practical.

PROGRESSIVE TOTAL CREDITS: 130 + 24 = 154





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LIST OF PROGRAMME ELECTIVE COURSES (PEC) - IV

Course Category	Course Code	Name of Course
PEC	29101PEC704	Program Elective Course –IV A. Blockchain Technology B.Graph Neural Networks C.AI and Data Analytics for IoT

TABLE NO.15: LIST OF PROGRAMME ELECTIVE COURSES (PEC) - IV

LIST OF PROGRAMME ELECTIVE COURSES (PEC) - V

Course Category	Course Code	Name of Course
PEC	29101PEC705	Program Elective Course –V A.Digital Forensics & Incident Response B.Business Intelligence C.Big Data Fundamentals & Applications

TABLE NO.16: LIST OF PROGRAMME ELECTIVE COURSES (PEC) - V





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FINAL YEAR B. TECH. IN ARTIFICIAL INTELLIGENCE & DATA SCIENCE
SEMESTER-VIII (W.E.F. 2029-30)

SEMESTER-VIII											
Course Category	Course Code	Name of Course	Teaching Scheme (Weekly Hours)				Cr	Evaluation Scheme (Weightage in Marks)			
			L	T	P	S		ISE	MSE	ESE/POE	Total
PCC	29101PCC801	MOOC Certificate Course	4	-	-	-	4	60	-	40	100
PEC	29101PEC802L	Program Elective Course -VI (Online) Data Analysis Tools certification: A. Power BI B. Tableau C. Apache Spark D. Hadoop E. TensorFlow	2	-	-	-	2	60	-	40	100
IT/OJT	29101ITOJT804	Internship	-	-	24	-	12	60	-	40	100
Total			6	00	24	00	18	180	-	120	300
Total Contact Hours: 30											

TABLE NO.17: CURRICULUM STRUCTURE OF FINAL YEAR B. TECH (SEM-VIII)

ISE – In Semester Evaluation, ESE – End Semester Examination, MSE – Mid Semester Examination, L-Lecture, T-Tutorial, P-Practical.

PROGRESSIVE TOTAL CREDITS: 154 + 18 = 172





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LIST OF PROGRAMME ELECTIVE COURSES (PEC) - VI

Course Category	Course Code	Name of Course
PEC	29101PEC802L	Program Elective Course –VI Data Analysis Tools certification: A. Power BI B. Tableau C. Apache Spark D. Hadoop E. TensorFlow

TABLE NO.17: LIST OF PROGRAMME ELECTIVE COURSES (PEC) - VI





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Honor and Multidisciplinary Minor

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LIST OF MDM COURSES OFFERED BY ARTIFICIAL INTELLIGENCE & DATA SCIENCE DEPARTMENT

Sem	Subject Code	Subject Name(AIML)	Credit
III	27101MDM307	Python Programming for AI and Data Science	2
IV	27101MDM406	Fundamentals of Artificial Intelligence	2
V	28101MDM508	Generative AI and Prompt Engineering	2
VI	28101MDM609	Data Analytics and Visualization	2
VII	29101MDM708	Interdisciplinary AI Capstone Project	4
VIII	29101MDM803	Artificial Intelligence in Industrial and Management Engineering(Online)	2
Total Credit			14

TABLE NO. 18: LIST OF MDM COURSES OFFERED BY AI&DS DEPT.





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B.TECH. IN ARTIFICIAL INTELLIGENCE & DATA SCIENCE WITH HONOR

1. It is required to complete SIX Courses (each of 3 credits) from ONLINE platform to earn total of 18 credits under Honor certification.
2. Student must complete and earn the credits for all the six courses starting from Second Year First semester (3rd semester) to Final Year Second Semester (8th semester).
3. Basket of the Honor courses (HN) and respective semester is mentioned in the following table.
4. To select course platform, first preference must be given to NPTEL.
5. While selecting online course, following points must be taken care of,
 - a. Selected course must be of advanced level and not basic or fundamental level.
 - b. Contents of the course should not be covered in any of the course offered in regular curriculum or not listed in any elective (Open or Program elective)





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SEMESTER WISE HONOR BUCKET LIST

Honors in Advanced Artificial Intelligence					
Sr. No.	Semester	Course Code	Course Name	NPTEL Weeks	Credit
1	III	27101HR301	Python for Data Science https://nptel.ac.in/courses/106106212	4	02
2	IV	27101HR401	Artificial Intelligence: Search Methods for Problem Solving https://onlinecourses.nptel.ac.in/noc25_cs88/preview	12	04
3	V	28101HR501	Reinforcement Learning https://onlinecourses.nptel.ac.in/noc25_cs92/preview	12	04
4	VI	28101HR601	Responsible & Safe AI Systems https://onlinecourses.nptel.ac.in/noc25_cs118/preview	12	04
5	VII	29101HR701	Social Network Analysis https://onlinecourses.nptel.ac.in/noc25_cs100/preview	12	04
6	VIII	29101HR801	Privacy and Security in Online Social Media https://onlinecourses.nptel.ac.in/noc25_cs117/preview	12	04
Total Credits					18/22

TABLE NO.19: SEMESTER WISE HONOR BUCKET LIST





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Curriculum Structure

Of

B. Tech. in

Artificial Intelligence & Data Science

With

Double Minor

Effective from Academic Year 2029-2030





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LIST OF MULTI-DISCIPLINARY DOUBLE MINOR COURSES DOUBLE MINOR

1. It is required to complete **SIX Courses** from **ONLINE NPTEL platform** to earn total of 18 credits under Double Minor (DM) certification.
2. The Double Minor Track should be other than Multidisciplinary Minor (MDM)
3. Student must complete and earn the credits for all the six courses starting from 3rd semester to 8th semester.
4. Students can choose any one basket from the following options. Once selected, the basket cannot be changed under any circumstances.

SEMESTER WISE DOUBLE MULTIDISCIPLINARY MINOR (MDM) BUCKET LIST

Double Multidisciplinary Minor Bucket List					
Sr. No.	Semester	Course Code	Course Name	NPTEL Weeks	Credit
1	III	27101DM301	Data Science for Engineers https://nptel.ac.in/courses/106106179	8	3
2	IV	27101DM401	Introduction Machine Learning https://nptel.ac.in/courses/106106139	12	4
3	V	28101DM501	Social Network Analysis https://onlinecourses.nptel.ac.in/e-learning/preview/noc22_cs117	12	4
4	VI	28101DM601	Privacy and Security in Online Social Media https://onlinecourses.nptel.ac.in/e-learning/preview/noc25_cs79	12	4
5	VII	29101DM701	Introduction to Data Analytics https://onlinecourses-archive.nptel.ac.in/noc17_mg24/preview	8	3
Total Credits					18

TABLE NO.21: SEMESTER WISE DOUBLE MULTIDISCIPLINARY MINOR BUCKET LIST





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Curriculum Structure

Of

B. Tech. in

Artificial Intelligence & Data Science

Honours

With

Research and Multidisciplinary

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B. TECH. IN ARTIFICIAL INTELLIGENCE & DATA SCIENCE – HONORS WITH RESEARCH AND MULTIDISCIPLINARY MINOR

Sr. No.	Sem.	Name of the Course	Teaching Scheme (Weekly Hours)				Cr	Evaluation Scheme (Weightage in Marks)			
			L	T	P	Total		ISE	ESE		
1	VII	Research Project Phase I	-	-	8	4	04	100	100	200	
2	VIII	Research Project Phase II	-	-	10	5	05	200	100	300	
			-	-	18	9	9	400	200	500	

TABLE NO.22: CURRICULUM STRUCTURE OF B. TECH. IN ARTIFICIAL INTELLIGENCE & DATA SCIENCE – HONORS WITH RESEARCH AND MULTIDISCIPLINARY MINOR

The students will work on a research project or dissertation for 18 credits in the fourth year in the respective Major Engineering / Tech. Discipline.

1. The decision regarding the distribution of 18 credits for Research Project in **Semesters VII and VIII** of the Fourth Year will be taken by Academic Authorities of University/ Autonomous Engineering Colleges.
 2. These 18 Credits will be over and above the min.160-max.176 Credits prescribed for Four Year Multidisciplinary Bachelor's Degree in Engg./ Tech. Program.
 3. *Research Project to be treated successful upon publishing of minimum two research papers in reputed Research Journals.
- ☐ Note 1: The Program will have declaration pool of these courses/MOOCs from which the aspirants will choose the courses/MOOCs.
- ☐ Note 2: These courses or MOOCs will be different than those to be opted in the VIII semester of B. Tech Major.
- ☐ Note 3: A successful B. Tech (Honor with Research) will be eligible to get enrolled to Ph.D. in same or allied field.
- ☐ Note 4: Students may complete these courses/MOOCs when they enter in FY B.Tech. and they may complete the same before their departure.

