IIIT Raichur BTech AI & DS Curriculum (2023 Batch)

	First Year						
	Semester -1				Semester-2		
Sl.No.	Course Name	Code	Credits		Course Name	Code	Credits
1	Mathematics I	MA101	3		Mathematics II	MA102	3
2	Introduction to Programming	ID110	3		Introduction to Life Sciences	BO121	1
3	Digital Fabrication	ID120	2		Hardware Description Language	EE121	2
4	Digital Logic Design	ID130	1		Discrete Structures	CS121	3
5	Digital Systems Design	ID131	1		Introduction to Object Oriented Programming	CS122	4
6	Introduction to AI and DS	ID141	2		Independent Project	ID151	1
7	Introduction to Computer Science	CS101	2		Professional Communication Skills and Writing	ID161	2
8	LA/CA elective	LXXXX	2				
	Total credits		16		Total credits		16

	Second Year						
	Semester - 3				Semester - 4		
Sl. No	Course Name	Code	Credits		Course Name	Code	Credits
1	Introduction to Probability, Statistics and Random Process	MA201	3		Design and Analysis of Algorithms	CS251	3
2	Data Structures	CS201	4		Operating Systems	CSXXX	3
3	Introduction to Python Programming/Python programming for AI and DS	CS231/ADXXX	3		Data Warehousing and Data Mining	ADXX	3
4	Computer Architecture	CS241	3		DBMS	CS261	3
5	Software Engineering	CS210	3		Engineering Elective	XXxxx	3
6	LA elective	LAXXX	3		LA Electives	LAxxx	2
7					Linear Algebra and Matrix Theory	MAXX	3
	Total credits		19		Total credits		20

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Third Year									
Semester-5					**Semester - 6**				
					Without Internship			**With Internship**	
Sl.No	**Course Name**	**Code**	**Credit**		**Course Name**	**Code**	**Credit**	**Course**	**Code**	**Credits**
1	Computer Networks	CS301	4		Mini Project 1	AD391	3	Internship	AD	6
2	Artificial Intelligence	ADXX	3		AD Elective 2	ADxxx	3			
3	Machine Learning and Data Science	ADXX	3		AD Elective 3	ADxxx	3			
4	Free Elective 1	XXxxx	3		Free Elective 2	XXxxx	3			
5	AD Elective 1	ADxxx	3		Science Elective	XXxxx	1			
6	Personality Development/Pro Ethics	ID162/ ID163	2							
	Total credits		**18**		**Total credits**		**13**			**6**

Fourth Year											
Semester - 7							**Semester- 8**				
	Without Internship			**With Internship**			**Without Internship**			**With Internship**	
Sl.no	**Course**	**Code**	**Credit**	**Course**	**Code**	**Credit**	Course	Code	Credit	Course	Code	Credit
1	Mini Project 2 / AD Elective 4	AD491	3	Mini Project 1/ AD Elective 2	ADxxx	3	Major Project	ADxxx	9	Major Project	CSxxx	9
2	AD Elective 5	ADxxx	3	AD Elective 3	ADxxx	3				Free Elective3	XXxxx	3
3	AD Elective 6	ADxxx	3	AD Elective 4	ADxxx	3				AD Elective 6	ADxxx	3
4	Free Elective 3	XXxxx	3	AD Elective 5	ADxxx	3				Science Elective	XXxxx	1
5	Free Elective 4	XXxxx	3	Free Elective 2	XXxxx	3						
	Total credits		**15**			**15**			**9**			**16**

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Total Credit requirement = 126

Sl. No	Without Internship		With Internship	
	Type	Credit	Type	Credit (wo/w)
1	Basic science	13	Basic science	13
2	Basic Engg	12	Basic Engg	12
3	Dept Core	32	Dept Core	32
4	AD Core	12	AD Core	12
5	*AD Electives	15(+3)	*AD Electives	15(+3)
6	Free Electives	12	Free Electives	9
7	Life Skills	4	Life Skills	4
8	LA/CA	7	LA/CA	7
9	*Project	15 (-3)	*Internship+ project	18 (-3)
10	Science Elective	1	Science Elective	1
11	Engineering Elective	3	Engineering Elective	3
Total	126		126	

- ***One AD Elective is in option with a mini project**

Credit Courses Categorization:

Sl. No.	Course Type	List of courses
1.	Basic Sciences	MA101, MA102, BO121, MA201, MAXX
2.	Basic Engg	EE121, All Courses with code IDXXX expect ID161 and ID162/163.
3.	Dept. Core	All Courses starting with CSXXX
4.	AD Core	All Courses starting with ADXXX except AD electives
5.	AD Elective	All AD Elective Courses.
6.	Free Electives	All Free Elective Courses.
7.	Life Skills	ID161 and ID162/163.
8.	LA/CA	All LA/CA Electives
9.	Project.	Minor Project 1, Minor Project 2 and Major Project.
10	Science Elective	One Science stream course
11	Engineering Elective	One Engineering stream elective course

Glossary of Terms:

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1. **CS Elective:** A course of the student's choice, to be selected from the pool of electives offered by the CS department
2. **Free Elective:** A course of the student's choice, to be selected from any department (subject to meeting the prerequisites) or any online course
3. **LA/CA Elective:** A course of the student's choice, to be selected from the Liberal Arts and Creative Arts category
4. **Science Elective:** A course of the student's choice, to be selected from the Science stream

Credit Requirement: The minimum credit requirement for successful completion of the B.Tech. AIDS course is 124 credits

Semester Internship:

1. A student can enroll for an internship in either the 6th or 7th or 8th semester.
2. A student has to score a minimum of 7.5 CGPA with no active backlogs in all previous semesters for availing of the internship.
3. The duration of the internship is 6 months.
4. Only one internship is allowed in the entire BTech course.
5. A student has to complete the mandatory credits requirement before going to the internship.
6. A student opting for the internship has to inform his/her faculty adviser prior (at the beginning of a particular semester) along with the letter of approval from the industry/research institute he/she wants to get enrolled in.
7. Upon successful completion, a student has to submit the internship report to the faculty adviser. A committee will be formed to conduct the viva for evaluation.
8. Below are the guidelines which have to be followed if a student opts for an internship in a specific semester:

Sl. No.	Semester for enrolling	Guidelines
1.	6th Semester	It is mandatory for the student to complete the credit courses in either the 7th or 8th semester.
		If no courses are offered during the 8th semester, the student has to register with the 6th-semester course (during the 8th semester only) to complete the credit requirements.
		Since only one internship is allowed, if a student completes the internship prior to placement, he/she will be allowed to appear for those companies whose mandatory requirement is not internship before PPO.
2.	7th Semester	It is mandatory for the student to complete the credit courses in either the 6th or 8th semester.
		If no courses are offered during the 8th semester, the student has to register with the 6th-semester course (during the 8th semester only) to complete the credit requirements.

		Since only one internship is allowed, if a student completes the internship prior to placement, he/she will be allowed to appear for those companies whose mandatory requirement is not internship before PPO.
3.	8th Semester	A student has to complete the credit requirements before going for an internship.
		If a company offered a mandatory internship, it is possible to convert the internship to an external project provided all the details of the project will be made public and the student should be allowed to publish the thesis online.

Probable list of AD Elective Courses :

1. Deep Learning
2. Soft Computing
3. Scalable Data Science
4. Digital Image Processing
5. A Mathematical Introduction to Robotics
6. Advanced Signal Processing for AI and DS
7. Edge AI
8. Advanced Statistical Learning
9. Image and Video Processing
10. Neuromorphic Computing
11. Pattern Recognition
12. Biomedical Signal and Image Processing.
13. AI in Health Care
14. Natural Language Processing
15. Reinforcement Learning
16. Computational Geometry
17. Text Mining
18. Social Text Mining (IIT Patna)
19. Conversational AI
20. Deep Learning for NLP
21. Machine Translation
22. Sentiment and Emotion Analysis
23. Time Series Analysis
24. Data Engineering
25. Graph and Social Networking
26. Big Data for Data Science
27. Information Retrieval