

Curriculum (2020 Batch)

First Year						
Semester - 1				Semester - 2		
Sl. No	Course Name	Code	Credits	Course Name	Code	Credits
1	Calculus I	MA101	1	Vector Calculus	MA121	1
2	Calculus II	MA102	2	Elementary Linear Algebra	MA122	1
3	Introduction to Programming	ID110	3	Differential Equations	MA123	1
4	Digital Fabrication	ID120	2	Introduction to Life Sciences	BO121	1
5	Digital Logic Design	ID130	1	Hardware Description Language	EE121	2
6	Digital Systems Design	ID131	1	Discrete Structures	CS121	3
7	Introduction to AI	ID141	1	Introduction to Data Structure	CS122	3
8	Introduction to Computer Science	CS101	2	Independent Project	ID151	1
9	LA/CA elective	LXXXX	2	Professional Communication Skills and Writing	ID161	2
Total credits			15	Total credits		15

Second Year						
Semester - 3				Semester - 4		
Sl. No	Course Name	Code	Credits	Course Name	Code	Credits
1	Introduction to Probability	MA201	1	Theory of Computation	CS251	3
2	Data Structures	CS201	3	Operating System 2	CS221	3
3	Operating System 1	CS220	1	Compiler and Programming Language	CS232	3
4	Design and Analysis of Algorithms	CS202	3	DBMS	CS261	3
5	Software Engineering	CS210	3	Engineering Elective	XXxxx	3
6	Computer Architecture	CS241	3	LA Electives	LAXxx	2
7	Principles of Programming Language	CS231	1			
8	LA elective	LAXXX	3			
Total credits			18	Total credits		17

Third Year

Third Year									
Semester-5				Semester - 6					
				Without Internship			With Internship		
Sl.No	Course Name	Code	Credit	Course Name	Code	Credit	Course	Code	Credit
1	Computer Networks	CS301	4	Mini Project 1	CS391	3	Internship	CS	6
2	Foundations of Machine Learning	CS311	3	CS Elective 3	CSxxx	3			
3	CS Elective 1	CSxxx	3	CS Elective 4	CSxxx	3			
4	Free Elective 1	XXxxx	3	Free Elective 2	XXxxx	3			
5	CS Elective 2	CSxxx	3	Science Elective	XXxxx	1			
6	Personality Development/Pro Ethics	ID162 /ID163	2						
Total			18			13			6

Fourth Year

Fourth Year												
Semester - 7							Semester - 8					
Without Internship				With Internship			Without Internship			With Internship		
Sl.no	Course	Type	Credit	Course	Type	Credit	Course	Type	Credit	course	Type	Credit
1	Mini Project 2 / CS Elective 5	CS491	3	Minor Project 1 / CS Elective 3	CSxxx	3	Major Project	CS	9	Major Project	CSxxx	9
2	CS Elective 6	CSxxx	3	CS Elective 4	CSxxx	3				Free Elective 3	XXxxx	3
3	CS Elective 7	CSxxx	3	CS Elective 5	CSxxx	3				CS Elective 7	CSxxx	3
4	Free Elective 3	XXxxx	3	CS Elective 6	CSxxx	3				Science Elective	XXxxx	1
5	Free Elective 4	XXxxx	3	Free Elective 2	XXxxx	3						
Total			15			15			9			16

Total Credit requirement = 120

Sl. No	Without Internship		With Internship	
	Type	Credit	Type	Credit (wo/w)
1	Basic science	9	Basic science	9
2	Basic Engg	17	Basic Engg	17
3	Dept Core	38	Dept Core	38
4	*Dept Electives	21 (-3)	*Dept Electives	21 (-3)
5	Free Electives	12	Free Electives	9
6	Life Skills	4	Life Skills	4
7	LA/CA	7	LA/CA	7
8	*Project	15 (+3)	*Internship+ project	12 (+3)
Total		120		120

* One CS Elective is in option with a minor project

Glossary of Terms:

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 course is 120 credits

Semester Internship:

1. Semester Internship is optional and can be undertaken from **January to June (i.e. in the 6th semester)**.
2. Only students with **CGPA > 8.0** at the end of the 4th semester are eligible.
3. The duration of the semester internship must be of minimum six months and only with a single company. **It cannot be fractalized.**
4. Semester Interns can be recruited **only in Phase I (July to October i.e. in the 5th semester)**.
5. It will be of 6 credits and evaluation will be done by the faculty committee at the end of the internship
6. Students need to submit Internship Report for grading by IITH Faculty
7. The students should complete the credits of the 6th semester missed out due to Semester Internship in any other semesters by end of the 8th semester for the award of B.Tech degree.
8. The students will not be allowed to register for any course credits during the semester internship irrespective of whether the internship is onsite or online.
9. The students should abide by the principle of making use of the semester completely to understand the industry environment and should exceed the expectations of the company offering semester internships. Students should use this opportunity to build professional networks in the industry.

Provision for Online Courses:

1. After the completion of second year, a student can opt for taking up an online course **(Subject to approval from the Department)** against Free electives.
2. The list of online platforms from which courses can be taken up will be updated by the department.
3. The maximum allowed credits for online course (OC) is 6 credits
4. The minimum course hours for an OC should be 40 hours
5. A student cannot take more than 3 credits or one OC in a semester.
6. A student cannot take any course which he/she has already taken in any previous semester or is already included in the list of departmental core subject
7. Evaluation of OC will also be done by a faculty of IIITR **(to be decided by the HoD of the department)** and the final grades will be based on the following rule:

Final score = 0.4 * marks obtained on the online platform + 0.6 * Marks obtained in the evaluation conducted by the faculty

B.Tech Honors

IIIT-Raichur has provision for an Honors program that is designed to challenge the brighter and more ambitious students, without burdening an average student. Some salient features are listed below:

- A student can opt for Honors after the completion of the second year.
- The student should have a CGPA ≥ 8.0 (without any backlog) at the end of the fourth semester.
- The student must complete an additional 12 discipline credits.
- Out of the 12 credits, a student may take up to 6 credits of Online Courses (OC) **(subject to approval from the authority concerned)**.
- The student should have CGPA ≥ 8.0 (without any backlog) at the end of the eighth semester and should not have any backlog throughout the B.Tech course.

Probable list of CS Electives: Elective courses offered by the CSE department of IITH and following

1. Knowledge Representation and Reasoning
2. Machine Learning
3. Logic in Computer Science
4. Formal Verification

5. Information Retrieval
6. Cyber Security
7. Cryptography (and Network security)
8. Big Data analysis and Applications
9. Introduction to Multi-Agent Modelling
10. Graphics and Multimedia
11. Data Mining and warehousing
12. Computational Geometry
13. Digital Image Processing
14. Soft Computing and evolutionary AI
15. Distributed Computing
16. High-performance computing
17. Cloud Computing
18. Human-Computer Interaction
19. VLSI System design
20. Wireless networks
21. Advanced Algorithms
22. Combinatorial Optimization

Note: This is a probable list of electives and may change if required