NETAJI SUBHAS UNIVERSITY

JAMSHEDPUR, JHARKHAND

Established under the **Jharkhand State Private University Act, 2018**

Approved by AICTE, PCI, BCI, NCTE, INC & JNRC

COURSE STRUCTURE & DETAILED SYLLABUS

OF

COMPUTER SCIENCE & ENGINEERING (AI & ML)

FOR

B.TECH. FOUR YEAR DEGREE COURSE

(Applicable for the batches admitted from 2025-2026)

DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

NETAJI SUBHAS UNIVERSITY, JAMSHEDPUR

Pokhari, Near Bhilai Pahadi, Jamshedpur,Jharkhand

Registrar
Netaji Subhas University
Jamshedpur, Jharkhand

PREAMBLE

The B.Tech program in **Computer Science and Engineering with a specialization in Artificial Intelligence and Machine Learning** is designed to equip students with the theoretical foundations and practical skills needed to develop intelligent systems and data-driven solutions. In an era where machines are increasingly able to mimic human cognition, AI and ML have emerged as transformative technologies with vast potential across industries such as healthcare, finance, education, robotics, and cybersecurity.

This program blends core computer science subjects with specialized courses in artificial intelligence, machine learning, deep learning, natural language processing, and data science. It encourages students to explore cutting-edge research, apply advanced algorithms, and build scalable AI systems through hands-on labs, real-world projects, and internships.

The curriculum emphasizes critical thinking, ethical responsibility, and innovation, preparing graduates to address complex problems and contribute meaningfully to the advancement of intelligent technologies. Through a balanced integration of foundational knowledge, practical experience, and interdisciplinary exposure, the program aims to produce industry-ready professionals and future researchers who can lead the AI revolution responsibly and effectively.

VISION

To strive for excellence in education, research, and entrepreneurship, with the ultimate goal of becoming a global hub for innovation. Committed to advancing scientific and technological services, we aim to contribute meaningfully to society.

MISSION

- To provide high-quality education that nurtures innovation, entrepreneurship, and ethical values, shaping future professionals equipped for a globally competitive landscape.
- To collaborate with stakeholders by sharing institutional expertise in education and knowledge, fostering mutual growth in technical learning.
- To Cultivate an environment that encourages fresh ideas, groundbreaking research, and academic excellence, paving the way for future leaders, innovators, and entrepreneurs.
- To drive socio-economic progress by offering impactful scientific and technological solutions to society.

PROGRAM EDUCATIONAL OBJECTIVES (PEOs)

PEO-1	Graduates will build a strong foundation in computer science and engineering principles to excel in higher studies, competitive examinations, and professional careers in the IT industry and academia.
PEO-2	Graduates will be equipped with analytical, problem-solving, and programming skills that enable them to contribute effectively to the computing industry and adapt to emerging technologies.
PEO-3	Graduates will engage in research, innovation, and entrepreneurial activities by applying scientific knowledge, tools, and techniques to address real-world and interdisciplinary challenges.

PROGRAM OUTCOMES (POs)

PO-1	**Engineering knowledge**: Apply knowledge of mathematics, science, engineering fundamentals, and computer science to solve complex engineering problems.
PO-2	**Problem analysis**: Identify, formulate, review existing literature, and analyze complex engineering problems to reach substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

PO-3	**Design/Development of solutions**: Design and develop software systems and engineering solutions that meet specified needs, considering public health, safety, culture, and environmental concerns.
PO-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.
PO-5	**Modern tool usage**: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex mechanical engineering activities with an understanding of the limitations.
PO-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 professional engineering practice.
PO-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.
PO-8	**Ethics**: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
PO-9	**Individual and team work**: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
PO-10	**Communication**: Communicate effectively with the engineering community and with society at large, including the ability to comprehend, create effective reports, make effective presentations, and give and receive clear instructions.
PO-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.
PO-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 (PSOs)

PSO-1	Graduates will be able to design, develop, test, and deploy software applications using modern programming languages, frameworks, and tools, while following best practices and industry standards.
PSO-2	Graduates will be able to apply algorithmic principles, computational theory, data structures, and mathematical foundations to model, analyze, and solve real-world problems.
PSO-3	Graduates will be able to integrate and manage computer systems, networks, databases, cloud platforms, and AI/ML technologies to create scalable and efficient solutions in various application domains.

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B. TECH IN COMPUTER SCIENCE & ENGINEERING

COURSE STRUCTURE

GENERAL COURSE STRUCTURE & THEME

A. Definition of Credit:

1 Hr. Lecture (L) per week	1 Credit
1 Hr. Tutorial (T) per week	1 Credit
1 Hr. Practical (P) per week	0.5 Credit
2 Hours Practical (P) per week	1 Credit

B. Range of Credits: In the light of the fact that a typical Model Four-year Under Graduate degree program in Engineering has about 168 credits, the total number of credits proposed for the four-year B. Tech/B.E. in Computer Science & Engineering (Engineering & Technology) is kept as 168.

C. Structure of UG Program in CSE (AI/ML): The structure of UG program in Artificial Intelligence and Machine Learning shall have essentially the following categories of courses with the breakup of credits as given

Sl.	Category	Suggested Breakup of Credits (Total 168)
1	Humanities & Social Science Courses	9*
2	Basic Science Courses	17*
3	Engineering Science Courses	18*
4	Program Core Courses (Branch specific)	79*
5	Professional Elective Courses (Branch specific)	16*
6	Open Elective Courses (from Humanities, Technical Emerging or other Subjects)	06*
7	Project work, Seminar and Internship in Industry or elsewhere	20*
8	Mandatory Course	3*
9	Audit Courses [Environmental Sciences,Indian Constitution]	(non-credit)
Total		**168***

**Minor variation is allowed as per need of the respective disciplines.*

D. Course code and definition:

Course code	Definitions
L	Lecture
T	Tutorial
P	Practical
C	Credits
BSC	Basic Science Courses
ESC	Engineering Science Courses
HSMC	Humanities and Social Sciences including Management courses
PCC	Professional core courses
PEC	Professional Elective courses
OEC	Open Elective courses
LC	Laboratory course
MC	Mandatory courses
EEC	Employment Enhancement Courses (Project/Summer Internship/Seminar)

Category-wise Courses

HUMANITIES & SOCIAL SCIENCES COURSES [HS] & MANAGEMENT COURSES

(2 compulsory + 2 others)

Number of Humanities & Social Science Courses: 3
Credits: 9

Sl.	Code No.	Subject	Semester	Credits
1	HSMC 01	Communication Skills / English (Compulsory	2	2:0:2=3
2	HSMC 02	Universal Human Values-2 (Compulsory course)	2	2:1:0=3
3	HSMC 03	Theory of computation Ecosystems	5	3:0:0=3
			Total Credits:	**9**

BASIC SCIENCE COURSE [BSC] (Total 4)

Sl.	Code No.	Subject	Semester	Credits
1	BSC 101	Physics-1	1	3:1:2=5
3	BSC 102	Mathematics-1	1	3:1:0=4
5	BSC 104	Mathematics-2	2	3:1:0=4
4	BSC 103	Chemistry-1	2	3:0:2=4
			Total Credits:	**17**

ENGINEERING SCIENCE COURSE [ESC] (Total 8)

Sl.	Code No.	Subject	Semester	Credits
1	ESC 101	Basic Electrical Engineering	1	2:1:2=4
2	ESC 102	Engineering Graphics & Design	1	1:0:4=3
3	ESC 103	Design Thinking + Idea Lab (Audit)	1	0:0:2=1

4	ESC 104	Programming for Problem Solving	2	2:0:4=4
5	ESC 105	Manufacturing Practice Workshop	2	0:0:4=2
6	ESC 106	Mathematical Concepts for AI	3	3:1:0=4
			Total Credits:	**18**

PROFESSIONAL CORE COURSES [PCC] (Total 20)

Sl.	Code No.	Subject	Semester	Credits
1	PCC- CSE 201	Object Oriented Programming	3	3:0:2=4
2	PCC- CSE 202	Data Structures	3	3:0:2=4
3	PCC- CSE 203	Introduction to Machine Learning	3	3:0:2=4
4	PCC- CSE 204	Artificial Intelligence	3	3:1:0=4
5	PCC- CSE 205	Modern Computer Architecture	3	3:0:0=3
6	PCC- CSE 206	Theory of Computation	4	3:1:0=4
7	PCC- CSE 207	Database Systems	4	3:0:2=4
8	PCC- CSE 208	Deep Learning	4	3:0:2=4
9	PCC- CSE 209	Operating System	4	3:0:2=4
10	PCC- CSE 210	Discrete Mathematical Structures	4	3:1:0=4
11	PCC-CSE 211	Web Development Frameworks and Practices	4	3:0:1=4
12	PCC- CSE 212	Natural Language Processing	5	3:0:2=4
13	PCC- CSE 213	Advanced Machine Learning	5	3:0:2=4
14	PCC- CSE 214	Software Engineering	5	3:0:2=4
15	PCC- CSE 215	Optimization Techniques in Machine Leaning	6	3:1:0=4
16	PCC- CSE 216	Data and Visual analytics in AI	6	3:0:2=4
17	PCC- CSE 217	Soft Computing	6	3:0:2=4
18	PCC- CSE 218	Computer Networks	6	3:0:2=4
19	PCC- CSE 219	Algorithm Analysis and Design	6	3:0:2=4
20	PCC-CSE 220	Data Ware house and Data Mining	7	3:0:2=4
			Total Credits:	**79**

PROFESSIONAL ELECTIVE [PEC]

Total 4 To Be Taken

Sl.	Code No.	Subject	Semester	Credits
1	PEC -CSE 401	Statistical Thinking for Data Science	7 / 8	3:0:2=4
2	PEC -CSE 402	Machine Learning for Data Science	7 / 8	3:0:2=4
3	PEC -CSE 403	Data Visualization	7 / 8	3:0:2=4
4	PEC -CSE 404	Big Data Analytics	7 / 8	3:0:2=4
5	PEC -CSE 405	Solve Business Problems with AI	7 / 8	3:0:2=4
6	PEC -CSE 406	Pattern Recognition & Visual Recognition	7 / 8	3:0:2=4
7	PEC -CSE 407	Image and Video Processing	7 / 8	3:0:2=4
8	PEC -CSE 408	Deep Learning for Computer Vision	7 / 8	3:0:2=4

9	PEC -CSE 409	Autonomous Systems	7 / 8	3:0:2=4
10	PEC -CSE 410	Bioinformatics	7 / 8	3:0:2=4
11	PEC -CSE 411	Genome Sequencing	7 / 8	3:0:2=4
12	PEC -CSE 412	Algorithms for DNA Sequencing	7 / 8	3:0:2=4
13	PEC -CSE 413	Computational Neuroscience	7 / 8	3:0:2=4
14	PEC -CSE 414	AI in Gaming	7 / 8	3:0:2=4
15	PEC -CSE 415	AI in Healthcare	7 / 8	3:0:2=4
16	PEC -CSE 416	AI in Finance	7 / 8	3:0:2=4
17	PEC -CSE 417	Predictive Analytics	7 / 8	3:0:2=4
			Total Credits:	**16**

OPEN ELECTIVE [OEC]

Total 2 To Be Taken

Sl.	Code No.	Subject	Semester	Credits
1	OEC-CSE-301	IOT	3	3:0:0=3
2	OEC-CSE-302	Robotics	3	3:0:0=3
3	OEC-CSE-303	Machine Learning with Python	7	3:0:0=3
4	OEC-CSE-304	AI for Everyone	7	3:0:0=3
			Total Credits:	**6**

ENGINEERING PROJECT

Sl.	Code No.	Subject	Semester	Credits
1	PROJ- CSE 311	Engineering Project-1 (Minor Project)	6	3:0:0=3
2	PROJ- CSE 311	Internship	5,7	0:0:8=4
3	PROJ- CSE 311	Engineering Project-2 (Capstone Project I & II)	7,8	0:0:26=13
			Total Credits:	**20**

MANDATORY COURSES [MC]

Sl.	Code No.	Subject	Semester	Credits
1	AU- CSE 202	Indian Knowledge System	1	3:0:0=3
			Total Credits:	**3**

AUDIT COURSES [AU]

Note: These are mandatory non-credit courses.

Sl.	Code No.	Subject	Semester	Credits
1	AU- CSE 202	Sports/NSS/NCC/YOGA/Painting/Music/Classical dance	1	0:0:2=0
			Total Credits:	**0**

TOTAL = 168 credits | BSC = 10%, ESC = 11%, PCC = 47%, PEL+HSM+OEL+MC =20 %, PROJ = 12%

INDUCTION PROGRAM

The Essence and Details of Induction program can also be understood from the 'Detailed Guide on Student Induction program', as available on AICTE Portal, (Link:https://www.aicteindia.org/sites/default/files/Detailed%20Guide%20on%20Student%20Induc tion%20program.pdf).

Induction program (mandatory)	Three-week duration
Induction program for students to be offered right at the start of the first year.	• Physical activity • Creative Arts • Universal Human Values • Literary • Proficiency Modules • Lectures by Eminent People • Visits to local Areas • Familiarization to Dept./Branch & Innovations

Mandatory Visits/ Workshop/Expert Lectures:

a. It is mandatory to arrange one industrial visit every semester for the students of each branch.

b. It is mandatory to conduct a One-week workshop during the winter break after fifth semester on professional/ industry/ entrepreneurial orientation.

c. It is mandatory to organize at least one expert lecture per semester for each branch by inviting resource persons from domain specific industry.

Evaluation Scheme (Suggestive only):

a. **For Theory Courses**:

(The weightage of Internal assessment is 40% and for End Semester Exam is 60%)

b. For Practical Courses:

(The weightage of Internal assessment is 60% and for End Semester Exam is 40%)

c. For Summer Internship / Projects / Seminar etc.

Evaluation is based on work done, quality of report, performance in viva-voce, presentation etc.

Note: The internal assessment is based on the student's performance in mid semester tests (two best out of three), quizzes, assignments, class performance, attendance, viva-voce in practical, lab record etc.

Mapping of Marks to Grades

Each course (Theory/Practical) is to be assigned 100 marks, irrespective of the number of credits, and the mapping of marks to grades may be done as per the following table:

Range of Marks	Assigned Grade
91-100	A^+
81-90	A
71-80	B^+
61-70	B
51-60	C^+
46-50	C
40-45	D
< 40	F (Fail due to less marks)

Semester wise Structure

SEMESTER-I

Sl.	Code No.	Category	Name of the Subjects	Periods			Credits	Marks		
				L	T	P		IA	TE	TM
1	BTBSC 101	BSC	Engineering Mathematics- I	3	1	0	4	40	60	100
2	BTBSC 102	BSC	Engineering Physics-1	3	1	-	4	40	60	100
3	BTESC 103	ESC	Basics of Electrical Engineering	3	0	-	3	40	60	100
4	BTESC 104	ESC	Engineering Drawing	1	0	-	1	40	60	100
5	BTMC 105	MC	Indian Knowledge System	3	0	-	3	40	60	100
			Practical							
6	BTBSC 102P	BSC	Engineering Physics Lab	-	-	2	1	30	20	50
7	BTESC 103P	ESC	Basics of Electrical Engineering Lab	-	-	2	1	30	20	50
8	BTESC 104P	ESC	Engineering Drawing & Computer Graphics Lab	-	-	4	2	30	20	50
9	BTESC 107P	ESC	Design Thinking & IDEA Lab	-	-	2	1	30	20	50
10	BTAU 106	AU	Sports/NSS/NCC/YOGA/Painting/Music/Classical dance		-	2	0	-	-	-
Total				**13**	**2**	**12**	**20**	**320**	**380**	**700**

SEMESTER-II

Sl.	Code No.	Category	Name of the Subjects	Periods			Credits	Marks		
				L	T	P		IA	TE	TM
1	BTBSC 201	BSC	Engineering Mathematics -II	3	1	-	4	40	60	100
2	BTBSC 202	BSC	Engineering Chemistry	3	0	-	3	40	60	100
3	BTHSMC 203	HSMC	English for technical writing	2	0	0	2	40	60	100
4	BTESC 204	ESC	Programming for Problem Solving	2	0	-	2	40	60	100
5	BTHSMC 205	HSMC	Universal Human Values	2	1	0	3	40	60	100
Practical										
6	BTBSC 202P	BSC	Engineering Chemistry Lab	-	-	2	1	30	20	50
7	BTHSMC 203P	HSMC	English for technical writing	0	0	2	1	30	20	50
8	BTESC 204P	ESC	Programming for Problem Solving Lab	-	-	4	2	30	20	50
9	BTESC 206P	ESC	Manufacturing Practices Workshop			4	2	30	20	50
Total				**12**	**2**	**12**	**20**	**320**	**380**	**700**

SEMESTER-III

S. No.	Code No.	Category	Name of the Subjects	Periods			Credits	Marks		
				L	T	P		IA	TE	TM
1	BTCS AI301	PCC	Object Oriented Programming	3	0	-	3	40	60	100
2	BTCS AI302	PCC	Data Structures	3	0	-	3	40	60	100
3	BTCS AI303	PCC	Introduction to Machine Learning	3	0	-	3	40	60	100
4	BTCS AI304	PCC	Artificial Intelligence	3	1	0	4	40	60	100
5	BTCS AI305	PCC	Modern Computer Architecture	3	0	0	3	40	60	100
6	BTESC 306	ESC	Mathematical Concepts for AI	3	1	0	4	40	60	100
Practical										
7	BTCS AI301P	PCC	Object Oriented Programming Lab	-	-	2	1	30	20	50
8	BTCS AI302P	PCC	Data Structures Lab	-	-	2	1	30	20	50
9	BTCS AI303P	PCC	Introduction to Machine Learning Lab	-	-	2	1	30	20	50
			Total	**18**	**2**	**10**	**23**	**330**	**420**	**750**

SEMESTER-IV

S. No.	Code No.	Category	Name of the Subjects	Periods			Credits	Marks		
				L	T	P		IA	TE	TM
1	BTCSAI 401	PCC	Theory of Computation	3	1	0	4	40	60	100
2	BTCSAI 402	PCC	Database Systems	3	0	-	3	40	60	100
3	BTCSAI 403	PCC	Deep Learning	3	0	-	3	40	60	100
4	BTCSAI 404	PCC	Operating System	3	0	-	3	40	60	100
5	BTCSAI 405	PCC	Discrete Mathematical Structures	3	1	0	4	40	60	100
6	BTCSAI 406	PCC	Web Development Frameworks and Practices	3	0	-	3	40	60	100
Practical										
10	BTCSAI 402P	PCC	Database Systems Lab	-	-	2	1	30	20	50
9	BTCSAI 403P	PCC	Deep Learning Lab	-	-	2	1	30	20	50
10	BTCSAI 404P	PCC	Operating System Lab	-	-	2	1	30	20	50
11	BTCSAI 406P	PCC	Web Development Frameworks and Practices Lab	-	-	2	1	30	20	50
			Total	**18**	**2**	**7**	**24**	**360**	**440**	**800**

SEMESTER-V

S. No.	Code No.	Category	Name of the Subjects	Periods			Credits	Marks		
				L	T	P		IA	TE	TM
1	BTCSAI 501	PCC	Natural Language Processing	3	0	-	3	40	60	100
2	BTCSAI 502	PCC	Advanced Machine Learning	3	0	-	3	40	60	100
3	BTCSAI 503	PCC	Software Engineering	3	0	-	3	40	60	100
4	BTHS504	HS	Theory of computation Ecosystems	3	0	0	3	40	60	100
5	BTCSAI 505	OE	Open Elective-I	2	0	-	2	40	60	100
6	BTEEC506	EEC	Employment Enhancement course - 1	0	0	2	0	0	0	0
Practical										
7	BTCSAI 501P	PCC	Natural Language Processing Lab	-	-	2	1	30	20	50
8	BTCSAI 502P	PCC	Advanced Machine Learning Lab	-	-	2	1	30	20	50
9	BTCSAI 503P	PCC	Software Engineering Lab	-	-	2	1	30	20	50
10	BTCSAI 505P	OE	Open Elective-I Lab	-	-	1	1	30	20	50
11	BTEEC508P	EEC	Internship / Summer Industrial Training/ Seminar (4-6 Week)	0	0	4	2	30	20	50
Total				**14**	**0**	**13**	**20**	**350**	**400**	**750**

Open Elective 1	
S.No	**Subject**
1.	IOT
2.	Robotics

SEMESTER-VI

S. No.	Code No.	Category	Name of the Subjects	Periods			Credits	Marks		
				L	T	P		IA	TE	TM
1	BTCSAI601	PCC	Optimization Techniques in Machine Leaning	3	1	0	4	40	60	100
2	BTCSAI602	PCC	Data and Visual analytics in AI	3	0	-	3	40	60	100
3	BTCSAI603	PCC	Soft Computing	3	0	-	3	40	60	100
4	BTCSAI604	PCC	Computer Networks	3	0	-	3	40	60	100
5	BTCSAI605	PCC	Algorithm Analysis and Design	3	0	-	3	40	60	100
6	BTEEC606	EEC	Employment Enhancement course - 2	0	0	2	0	0	0	0
Practical										
7	BTCSAI602	PCC	Data and Visual analytics in Ai Lab	-	-	2	1	30	20	50
8	BTCSAI603	PCC	Soft Computing Lab	-	-	2	1	30	20	50
9	BTCSAI604	PCC	Computer Networks Lab	-	-	2	1	30	20	50
10	BTCSAI605P	PCC	Algorithm Analysis and Design Lab	-	-	2	1	30	20	50
11	BTCSAI607P	EEC	Minor Project	3	0	0	3	30	20	50
Total				18	1	10	23	350	400	750

SEMESTER-VII

S. No.	Code No.	Category	Name of the Subjects	Periods			Credits	Marks		
				L	T	P		IA	TE	TM
1	BTCSAI701	PCC	Data Ware house and Data Mining	3	0	-	3	40	60	100
2	BTCSAI702	PE	Professional Elective-I	3	0	-	3	40	60	100
3	BTCSAI703	PE	Professional Elective-II	3	0	-	3	40	60	100
4	BTCSAI704	OE	Open Elective-II	2	0	0	2	40	60	100
Practical										
5	BTCSAI701	PCC	Data Ware house and Data Mining Lab	-	-	2	1	30	20	50
6	BTCSAI702	PE	Professional Elective-I Lab	-	-	2	1	30	20	50
7	BTCSAI703	PE	Professional Elective-II Lab	-	-	2	1	30	20	50
8	BTCSAI704	OE	Open Elective-II Lab		-	2	1	30	20	50
9	BTEEC701	EEC	Capstone Project (Part-I)	-	-	10-	5	30	20	50
10	BTEEC508P	EEC	Internship / Summer Industrial Training/ Seminar (4-6 Week)	0	0	4	2	30	20	50
Total				12	0	6	22	340	360	700

Professional Elective I & II	
S.No	**Subject**
1.	Statistical Thinking for Data Science
2.	Machine Learning for Data Science
3.	Data Visualization
4.	Big Data Analytics
5.	Solve Business Problems with AI
6.	Pattern Recognition & Visual Recognition
7.	Image and Video Processing
8.	Deep Learning for Computer Vision
9.	Autonomous Systems
10.	Bioinformatics
11.	Genome Sequencing
12.	Algorithms for DNA Sequencing
13.	Computational Neuroscience
14.	AI in Gaming
15.	AI in Healthcare
16.	AI in Finance
17.	Predictive Analytics

Open Elective 2	
S.No	**Subject**
1.	Machine Learning with Python
2.	AI for Everyone

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SEMESTER –VIII

S. No.	Code No.	Category	Name of the Subjects	Periods			Credits	Marks		
				L	T	P		IA	TE	TM
1	BTCSAI801	PE	Professional Elective-III	3	0	-	3	40	60	100
2	BTCSAI802	PE	Professional Elective-IV	3	0	-	3	40	60	100
Practical										
3	BTCSAI801P	PE	Professional Elective-III	-	0	2	1	30	20	50
4	BTCSAI802P	PE	Professional Elective-IV	-	0	2	1	30	20	50
5	BTEEC803P	EEC	Capstone Project (Part-II)	-	-	-	8	80	120	200
Total				6	0	4	16	220	280	500

Professional Elective III & IV	
S.No	**Subject**
1.	Statistical Thinking for Data Science
2.	Machine Learning for Data Science
3.	Data Visualization
4.	Big Data Analytics
5.	Solve Business Problems with AI
6.	Pattern Recognition & Visual Recognition
7.	Image and Video Processing
8.	Deep Learning for Computer Vision
9.	Autonomous Systems
10.	Bioinformatics
11.	Genome Sequencing
12.	Algorithms for DNA Sequencing
13.	Computational Neuroscience
14.	AI in Gaming
15.	AI in Healthcare
16.	AI in Finance
17.	Predictive Analytics