RAMAIAH
UNIVERSITY
OF APPLIED SCIENCES

Programme Specifications

B. Tech. Programme

Programme:	Department:
Artificial Intelligence and Machine Learning	Computer science and Engineering

Faculty of Engineering & Technology

M.S. Ramaiah University of Applied Sciences

University House, New BEL Road, MSR Nagar, Bangalore – 560 054

www.msruas.ac.in

PROGRAMME SPECIFICATIONS: COMPUTER SCIENCE AND ENGINEERING

Faculty	Engineering and Technology (FET)
Department	Computer Science and Engineering
Programme	Artificial Intelligence and Machine Learning
Dean of Faculty	Prof. H.M. Rajasekhara Swamy
Head of Department	Prof. PVR Murthy

1	**Title of the Award** B. Tech. in Artificial Intelligence and Machine Learning
2	**Modes of Study** Full Time
3	**Awarding Institution/Body** M. S. Ramaiah University of Applied Sciences
4	**Joint Award** Not Applicable
5	**Teaching Institution** Faculty of Engineering and Technology, M.S. Ramaiah University of Applied Sciences
6	**Date of Programme Specifications** June 2020
7	**Date of Programme Approval by the Academic Council of MSRUAS** July 2020
8	**Next Review Date:** March 2024
9	**Programme Approving Regulating Body and Date of Approval** --
14	**Rationale for the Programme** Pioneering contributions by John von Neumann in computer architecture towards a stored program computer revolutionized the field of computers and they have become all pervasive. The wide and deep impact that computers have made in the social fabric is mainly due to various advances in programming language design and implementation, operating systems and computer networks over decades since the 1950s. The birth of Artificial intelligence (AI) is usually attributed to Dartmouth Conference in 1956. The theme of the conference was "every aspect of learning or any other feature of intelligence can be so precisely described that a machine can be made to simulate it". High expectations were raised by scientists that the dream of Artificial intelligence would be fulfilled within a generation. While there were ups and downs in the funding that Artificial Intelligence projects were granted based on the possibilities and opportunities that technological advances and limitations of the building blocks behind AI systems have exhibited over several decades since 1960, there is strong evidence that the theme of the Dartmouth conference is a reality today and that the field of Artificial Intelligence and Machine Learning is quite mature. The field of Artificial Intelligence and Machine learning deals with building intelligent entities. The advances in Artificial Intelligence over several decades have been so wide and deep with a deep socio-technological impact with a rich set of possibilities in future. At the same time, there is a broad spectrum of foundational concepts and methodologies behind Artificial Intelligence, namely, solving problems by

searching, knowledge reasoning and planning, uncertain knowledge and reasoning, learning from examples, learning probabilistic models, Natural Language Processing(NLP) and perception.

Furthermore, this is the era of Big Data making knowledge discovery by mining repositories of data, be it in healthcare, management or education, extremely important for decision making. The field of Data Science rests upon the foundational algorithms and methodologies in data mining, data processing and distributed computing paradigms that make efficient processing of Big Data possible.

There is growing evidence from data that there exists a huge need for professionals and scientists in Artificial Intelligence, Machine learning and Data Sciences. The dearth of professionals coupled with the fact that the fields of Artificial Intelligence, Machine learning and Data Sciences rest upon a rich set of theoretical concepts and practical tools that are foundational in nature clearly indicates that there exists a strong need for a B.Tech. Programme in Artificial Intelligence and Machine learning. The B.Tech Programme in Artificial Intelligence and Machine learning aims to lay the foundational background in computer science to start with, to be inter-disciplinary and to seamlessly integrate courses in Artificial Intelligence, Machine learning and Data Sciences to enable a student to effectively apply the learnings in industry and R&D establishments.

10	**Programme Accredited Body and Date of Accreditation** --
11	**Grade Awarded by the Accreditation Body** --
12	**Programme Accreditation Validity** --
13	**Programme Benchmark** N/A
15	**Programme Mission** The purpose of the programme is creation of innovative problem solvers in multi-disciplinary settings, entrepreneurs and leaders applying the knowledge, understanding, cognitive abilities, practical skills and transferrable skills gained through systematic, flexible and rigorous learning in the chosen academic domain
16	**Graduate Attributes** 1. Ability to apply knowledge of mathematics, science, and Engineering fundamentals to solve complex problems in engineering 2. Ability to analyse engineering problems, interpret data and arrive at meaningful conclusions involving mathematical inferences 3. Ability to design an engineering system, component, or process to meet desired needs considering public health and safety, and the cultural, societal, and environmental considerations 4. Ability to understand and solve complex engineering problems by conducting experimental investigations 5. Ability to apply appropriate tools and techniques and understand utilization of resources appropriately to complex engineering activities 6. Ability to understand the effect of engineering solutions on legal, cultural, social and public health and safety aspects 7. Ability to develop sustainable solutions and understand their effect on society and environment 8. Ability to apply ethical principles to engineering practices and professional responsibilities 9. Ability to work as a member of a team, to plan and to integrate knowledge of various engineering disciplines and to lead teams in multidisciplinary settings 10. Ability to make effective oral presentations and communicate technical ideas to abroad audience using written and oral means 11. Ability to lead and manage multidisciplinary teams by applying engineering and management principles

	12. Ability to adapt to the changes and advancements in technology and engage in independent and life-long learning
17	**Programme Goal**
	The programme goal is to produce graduates with critical, analytical and problem-solving skills, and ability to think independently, to pursue a career in Artificial Intelligence and Machine Learning.
18	**Programme Objectives:**
	The main objective of B.Tech. in AI and Machine Learning programme is to prepare a student to apply AI, Machine learning and Deep Learning techniques to various problems in science and engineering with relevance to society:

1. Comprehensive learning of science, engineering and mathematics
2. Gaining proficiency in programming and AI tools and libraries
3. Gaining competence to apply AI models and methodologies to real-life problems

19	**Programme Intended Learning Outcomes**

The intended learning outcomes are listed under four headings:
   1. Knowledge and Understanding, 2. Cognitive skills 3.Practical skills and
   4. Capability/ Transferable skills.

Knowledge and Understanding

After undergoing this programme, a student will be able to

KU1:	Identify and describe various concepts and techniques in AI and Machine Learning
KU2:	Explain the underlying logical and engineering principles that govern Artificial Intelligencesystems/processes
KU3:	Compare and contrast newer approaches and technologies with the existing ones
KU4:	Understand the impact of engineering solutions and accept professional, ethical, social, legal and economic responsibilities

Cognitive Skills

After undergoing this programme, a student will be able to

CS1:	Design and synthesise algorithms, architectures and software for AI and Machine Learning systems
CS2:	Model, simulate and analyse AI systems
CS3:	Modify existing algorithms, architectures and programs to meet newer requirements
CS4:	Apply scientific and engineering principles to evaluate AI systems and answer what if questions

Practical Skills

After undergoing this programme, a student will be able to

PS1:	Use AI and Machine Learning Programming environments and tools in practice
PS2:	Employ appropriate tools for development of deep learning solutions
PS3:	Apply Data Mining techniques in practice
PS4:	Analyse ethical considerations in applications of AI systems being designed

Capability Skills/Transferrable Skills

After undergoing the programme, a student will be able to-

TS1:	Manage information, develop technical reports and make presentations
TS2:	Build, Manage and Lead a team to successfully complete a project and communicate across teams and organizations to achieve professional objectives
TS3:	Work under various constraints to meet project targets
TS4:	Adopt to the chosen profession by continuously upgrading his/her knowledge and understanding through Life-long Learning philosophy

20. Programme Structure (given in Tables below for each semester):

Chemistry Cycle:

Sl. No.	Code	Course Title	Theory (h/W/S)	Tutorials (h/W/S)	Practical (h/W/S)	Total Credits	Max. Marks
1	20MTB101A	Engineering Mathematics - 1	2	2	0	4	100
2	20CHB105A	Engineering Chemistry	3	0	0	3	100
3	20CES105A	Elements of Mechanical Engineering and Workshop Practice	2	0	2	3	100
4	20EES106A	Elements of Electrical Engineering	3	0	0	3	100
5	20CSS107A	Elements of Computer Science and Engineering	3	0	0	3	100
6	20CHL106A	Engineering Chemistry Laboratory	0	0	2	1	50
7	20CSL108A	Computer Programming Laboratory	0	0	2	1	50
8	20EEL109A	Basic Electrical Engineering Laboratory	0	0	2	1	50
9	20TSH102A	Professional Communication	2	0	0	2	50
		Total	**15**	**2**	**8**	**21**	**700**
	Total number of contact hours per week		**25 hours**				
	Number of credits can be registered		**Minimum**	**17**	**Maximum**		**21**

Physics Cycle:

Sl. No.	Code	Course Title	Theory (h/W/S)	Tutorials (h/W/S)	Practical (h/W/S)	Total Credits	Max. Marks
1	20MTB104A	Engineering Mathematics-2	2	2	0	4	100
2	20PHB102A	Engineering Physics	3	0	0	3	100
3	20CES101A	Engineering Mechanics	3	0	0	3	100
4	20ECS102A	Elements of Electronics Engineering	3	0	0	3	100
5	20MES103A	Engineering Drawing	1	0	4	3	100
6	20PHL103A	Engineering Physics Laboratory	0	0	2	1	50
7	20ECL104A	Basic Electronics Laboratory	0	0	2	1	50
8	20TSH101A	Constitution, Human Rights and Law	2	0	0	2	50
		Total	**14**	**2**	**8**	**20**	**650**
	Total number of contact hours per week		**24 Hours**				
	Number of credits can be registered		**Minimum**	**16**	**Maximum**		**20**

SEMESTER 3

SEMESTER 4

Sl. No.	Code	Course Title	Theory (h/W/S)	Tutorials (h/W/S)	Practical (h/W/S)	Total Credits	Max. Marks
1	20MTB201A	Engineering Mathematics3	3	1	0	4	100
2	20AIC202A	Foundations of Machine Learning I	3	1	0	4	100
3	20CSC203A	Data Structures using Python	3	0	0	3	100
4	20AIC204A	Principles of Artificial Intelligence	3	0	0	3	100
5	20CSC205A	Microprocessors and Architecture	3	0	0	3	100
6	20AIC206A	Basics of Operating Systems	1	2	0	3	50
7	20CSL206A	Python &Data Structures Laboratory	0	0	2	1	50
8	20AIL207A	Artificial Intelligence Laboratory	0	0	2	1	50
9	20CSL208A	Microprocessors Laboratory	0	0	2	1	50
10	20CEM210A	Environmental Studies	2	0	0	0	Audit
		Total	**18**	**4**	**6**	**23**	**650**
	Total number of contact hours per week		**27 hours**				
	Number of credits can be registered		**Minimum**			**Maximum**	**23**

Sl. No.	Code	Course Title	Theory(h/W/S)	Tutorials (h/W/S)	Practical (h/W/S)	Total Credits	Max. Marks
1	20MTB211A	Engineering Mathematics4	3	1	0	4	100
2	20AIC212A	Foundations of Machine Learning II	3	1	0	4	100
3	20CSC213A	Programming Paradigms	3	1	0	4	100
4	20CSC214A	Design and Analysis of Algorithms	3	0	0	3	100
5	20AIC215A	Machine Learning - I	3	1	0	3	100
6	20AIL216A	Machine Learning Laboratory	1	1	2	1	100
7	20CSL218A	Programming Paradigms Laboratory	0	0	2	1	50
	Total		**16**	**4**	**4**	**20**	**650**
	Total number of contact hours per week		**24 hours**				
	Number of credits can be registered		**Minimum**			**Maximum**	

SEMESTER 5

Sl. No.	Code	Course Title	Theory (h/W/S)	Tutorials (h/W/S)	Practical (h/W/S)	Total Credits	Max. Marks
1	20AIC301A	Data Mining	3	1	0	4	100
2	20CSC302A	Database Systems	3	0	0	3	100
3	20AIC303A	Machine Learning - II	3	0	0	4	100
4	20CSC303A	Computer Networks	3	0	0	3	100
5	20AIC306A	Innovation Course 1	3	0	0	3	100
6	20CSC307A	IoT - 1	0	1	0	1	100
7	20CSL307A	Database Systems Laboratory	0	0	2	1	50
8	20CSL308A	Computer Networks Laboratory	0	0	2	1	50
9	20CSH309A	Economics and Cost Estimation in Computer Engineering	2	0	0	2	50
Total			17	2	6	22	750
Total number of contact hours per week			hours				
Number of credits can be registered			Minimum		Maximum		

SEMESTER 6

Sl. No.	Code	Course Title	Theory (h/W/S)	Tutorials (h/W/S)	Practical (h/W/S)	Total Credits	Max. Marks
1	20CSC311A	Graph Theory and Optimization	3	0	0	3	100
2	20AIC312A	Computer Vision	3	1	0	4	100
3	20AIC313A	Innovation Course II	3	0	0	3	100
4	20AIC314A	Natural Language Processing	3	0	0	3	100
5	20AIC315A	Deep Learning and Applications	3	0	0	3	100
6	20AIC316A	Distributed and Cloud Computing	3	1	0	4	100
7	20AIC317A	Pattern recognition	3	0	0	3	100
8	20AIL318A	Natural Language Processing Laboratory	0	0	2	1	50
9	20AIL319A	Deep Learning and Applications Laboratory	0	0	2	1	50
Total			20	2	4	25	700
Total number of contact hours per week			hours				
Number of credits can be registered			Minimum		Maximum		25

SEMESTER 7

Sl.No.	Code	CourseTitle	Theory (h/W/S)	Tutorials (h/W/S)	Practical (h/W/S)	Total Credits	Max. Marks
1	Professional Elective	Professional Core Elective - 1	3	2	0	4	100
2	Professional Elective	Professional Core Elective - 2	3	2	0	**3**	100
3	Professional Elective	Professional Core Elective - 3	3	2	0	3	100
4	Open Elective	Open Elective	3	0	0	3	100
6	20AIP401A	I] Project Work - I	0	0	12	4	100
	20AIP402A	II]Internship (Choose one)					
7	20AIP403A	Seminar	0	0	2	1	50
		Total	**12**	**6**	**14**	**18**	**550**
	Total number of contact hours per week	**28 hours**					
	Number of credits can be registered	**Minimum**			**Maximum**	**18**	

SEMESTER 8

Sl.No.	Code	CourseTitle	Theory (h/W/S)	Tutorials (h/W/S)	Practical (h/W/S)	Total Credits	Max. Marks
1	Professional Elective	Open Elective - 2	3	0	0	3	100
2	20AIP410A	Project work 2	0	0	20	8	100
						11	
	Total number of contact hours per week	**31 hours**					
	Number of credits can be registered	**Minimum**	**0**		**Maximum**	**11**	

Professional Core Elective Courses:

SL.no	Group	AIML:VII Sem		
		PCE-1 Course Titles	PCE-2 Course Title	PCE-3 Course Titles
1	**AI Electives-Set 1 (Healthcare)**	Information Security & Protection 20CSC304A	IoT -2 (**3 cr**) 20CSE404A	AI & Healthcare 20AIE404A
2	**AI Electives Set 2 (AI & Security)**	Information Security & Protection 20CSC304A	Computational Intelligence 20AIE405A	Cryptography 20CSE407A
3	**Big Data Analysis**	Data Engineering 20AIE410A	Time Series Analysis 20AIE411A	Graph Analytics for Big Data 20AIE412A

21	**Programme Delivery**
	As per the time table

22	**Teaching and Learning Methods**
	1. Face to Face Lectures using Audio-Visuals
	2. Workshops-Group Discussions, Debates, Presentations
	3. Demonstrations
	4. Guest Lectures
	5. Laboratory-work/Fieldwork/workshop
	6. Industry Visit
	7. Seminars
	8. Group Exercises
	9. Project work
	10. Project Exhibitions
	11. Technical Festivals

23	**Assessment and Grading**

1. Every course will be assessed for a weight of 100%

2. For the courses having 100% theory

There are two components-Component-1andComponent-2

Component-1 (CE) carries a weight of50%andComponent-2(SEE) carriesaweightof50%

Component-1 (CE): 50%weight

The course leader will indicate the mode of assessment in consultation and approval of the respective HoD and the faculty Dean, before commencement of the semester.

The template for weightage of CE and SEE in percentages for each theory course is indicated in Table below.

ILO No.	Intended Learning Outcome	CE (Weightage: 50 %)				SEE (Weightage: 50 %)
		Assessment Type	Comp-1a	Comp-1b	Comp-1c	
		Comp Weightage (%)	00	00	00	Sem End Exam
1	ILO-1					
2	ILO-2					
3	ILO-3					
4	ILO-4					
5	ILO-5					
6	ILO-6					

CE – can be from any combination of the following:

Faculty have the freedom to decide on Assignments, term Tests, Seminars, Tech Talks, Mini-Projects, Case-Studies, Self-Study, others, if any. And their weightage

Component - 2 (SEE): 50% weight

A 3 hour duration Semester End Examination will be conducted for a maximum of 100 marks

and will be reduced to 50% weight.

Astudentisrequiredtoscoreaminimumof40%marksin Semester end examination and 40% marks overall in each theory course.

3. For Laboratory/ Practical courses

Total Marks : 50

Component 1(CE) : Laboratory Report: 50% Weight

Component 2(SEE) Semester End Examination: 50% Weight

A 3-hour duration Semester End Examination will be conducted for a maximum of 50marks.

The course leader will indicate the mode of assessment in consultation and approval of the respective HOD and the faculty Dean before commencement of the semester.

The template for weightage of CE and SEE in percentages for each course is indicated in Table below.

ILO No.	Intended Learning Outcome	Assessment Type	CE (Weightage: 50 %)				SEE (Weightage: 50 %):
			Conduction of Lab Exercises)	(Viva)	(Lab Record Submission)	(Lab Test)	SEE
		Comp Weightage (%)					50
1	ILO-1						
2	ILO-2						

A student is required to score a minimum of 40% marks in Semester end examination and 40% marks overall in each laboratory course.

4. For courses with a combination of theory and laboratory

Therearetwocomponents-Component-1 and Component-2

Component-1 (CE) carries a weight of50%andComponent-2(SEE) carriesaweightof50%.

Component-1 (CE): 50%weight

The course leader will indicate the mode of assessment in consultation and approval of

The respective HoD and the faculty Dean, before commencement of the semester.

The template for weightage of CE and SEE in percentages for each course is indicated in Table below.

| ILO No. | Intended Learning Outcome | CE (Weightage: 50 %) | SEE (Weightage: 50 %) |
| | | | |

			Assessment Type	Comp-1a	Comp-1b	Comp-1c Lab	SEE
			Comp Weightage (%)	00	00	00	50
	1	ILO-1					
	2	ILO-2					
	3	ILO-3					
	4	ILO-4					
	5	ILO-5					
	6	ILO-6					

CE – can be from any combination of the following:

Assignments, term Tests, Seminars, Tech Talks, Mini-Projects, Case-Studies, Self-Study, others,

A 3 hour duration Semester End Examination will be conducted for a maximum of 100 marks and will be reduced to 50 marks.

Astudentisrequiredtoscoreaminimumof40%marksin Semester end examination and 40% marks overall in each theory course.

5. Other flexibilities (exceptions) as per the Programme regulations.

24	**Attendance** A minimum of 80% attendance is compulsory to appear for semester end examinations. Condoning of attendance shortage is as per the Academic Regulations of B. Tech. Programme.
25	**Award of Class** As per the Academic Regulations of B. Tech. Programme

26	**Student support for Learning**
	  1. Course Notes
	  2. Reference Books in the Library
	  3. Magazines and Journals
	  4. Internet Facility
	  5. Computing Facility
	  6. Laboratory Facility
	  7. Workshop facility
	  8. Staff support
	  9. Lounges for Discussions
	  10. Any other support that enhances their learning

27	**Quality Control Measures**
	  1. Review of Course Notes
	  2. Review of Question Papers and Assignment Questions
	  3. Student Feedback
	  4. Moderation of assessed work
	  5. Opportunities for students to see their assessed work
	  6. Review and Audit by external examiners
	  7. Staff Student Consultative Committee meetings
	  8. Student exit feedback

28 Curriculum Map

HST/CN	BS	ES/EC	CS	OEE	KU1	KU2	KU3	KU4	CS1	CS2	CS3	CS4	PS1	PS2	PS3	PS4
Course Code					**Intended Learning Outcomes**											
					Knowledge and Understanding				**Cognitive(Thinking) Skills(Critical, Analytical, Problem Solving)**				**Practical skills**			
a	b	c	d	e												
H101A	B101A	C101A	C108A			bcd		abcd		d		bd		bcd		
H102A	B102A	C102A	L109A		cd	bcd	d	abcd	d	d	d	bd	d	bcd		
T201A	B105A	C103A	C204A		d	bcd	d	abcd	d	d	d	bd	d	bcd	d	d
	B201A	L104A	C205A		cd	bcd	d	bcd	d	d	d	bd	d	bcd		
	B202A	L105A	L206A		d	bcd		bcd	d	d		bd	d	bcd		
	L103A	C106A	L207A		cd	bcd	d	bcd	d	d	d	bd	d	bcd	d	d
	L106A	C107A	L208A		cd	bcd	d	bcd	cd	cd	cd	bcd	d	bcd		
	B211A	C108A	C213A		cd	cd		cd	d	d		d	d	d	d	d
	B212A	L109A	C214A		d	d	d	d	d	d	d	d	d	d	d	d
		L110A	C215A		d	d		d	d	d		d	d	d		
			L216A		d	d		d	d	d		d	d	d	d	d
			L217A		d	d		d	d	d		d	d	d	d	d
			C302A													
			C303A		d	d	d	d	d	d	d	d	d	d	d	d
			C304A		d	d		d	d	d		d	d	d	d	d
			C305A		cd	bcd	d	bcd	cd	cd	cd	bcd	d	b		
			C306A		d	d	d	d	d	d	d	d	d	d	d	d
			L307A		d	d		d	d	d		d	d	d	d	d
			L308A		d	d		d	d	d				d		
			L309A		d	d	d	d	d	d	d	d	d	d		
			C311A		d	d	d	d	d	d	d	d	d	d	d	d
			C312A		d	d	d	d	d	d	d	d	d	d	d	d
			C313A		d	d	d	d	d	d	d	d	d	d	d	d
			C314A		d	d		d	d	d		d	d	d		
			C315A		d	d	d	d	d	d	d	d	d	d	d	d
			C316A		d	d	d	d	d	d	d	d	d	d		
			L317A		d	d	d	d	d	d	d	d	d	d	d	d
			L318A		d	d	d	d	d	d	d	d	d	d		
			P401A		d	d		d	d	d		d	d	d		
			P402A		d	d	d	d	d	d	d	d	d	d		
			P403A		d	d	d	d	d	d	d	d	d	d		
			P410A		d	d	d	d	d	d	d	d	d	d	d	
			E401A		d	d	d	d	d	d	d	d	d	d	d	
			E402A		d	d	d	d	d	d	d	d	d	d	d	d
			E411A		d	d	d	d	d	d	d	d	d	d		
			E403A		d	d	d	d	d	d	d	d	d	d	d	
			E404A		d	d	d	d	d	d	d	d	d	d		
			E412A		d	d	d	d	d	d	d	d	d	d		
			E405A		d	d	d	d	d	d	d	d	d	d		
			E406A		d	d	d	d	d	d	d	d	d	d		
			E407A		d	d	d	d	d	d	d	d	d	d		
			E408A		d	d	d	d	d	d	d	d	d	d		
			E410A		d	d	d	d	d	d	d	d	d	d		
			Total 160 credits													

*Depends on elective course chosen

29 Capability / Transferable Skills Map

HST/CEN	BS	ES/EC	CS	OEE	GK	SL	WC	OC	P	B	IM	PM	L	AO
Course Code					**Skills**									
a	b	c	d	e	GK	SL	WC	OC	P	B	IM	PM	L	AO
H101A	B101A	C101	C108A		a	abcd	abcd	abcd	abcd		abcd	abcd		
H102A	B102A	C102	L109A		a	abcd	abcd	abcd	abcd	a	abcd	abcd		
T201A	B105A	C103	C204A		a	abcd	abcd	abcd	abcd		abcd	abcd		
	B201A	L104A	C205A		a	abcd	abcd	abcd	abcd	a	abcd	abcd		
	B202A	L105A	L206A			bcd	bcd	bcd	bcd		bcd	bcd		
	L103A	C106	L207A			bcd	bcd	bcd	bcd		bcd	bcd		
	L106A	C107	L208A			bcd	bcd	bcd	bcd		bcd	bcd		
	B211A	C108	C213A			bcd	bcd	bcd	bcd		bcd	bcd		
	B212A	L109A	C214A			cd	c	cd	cd		c	cd		
		L110A	C215A			d	d	d	d		d	d		
			L216A			d	d	d	d		d	d		
			L217A			d	d	d	d		d	d		
			C302A			d	d	d	d		d	d		
			C303A			d	d	d	d		d	d		
			C304A			d	d	d	d		d	d		
			C305A			d	d	d	d		d	d		
			C306A			d	d	d	d		d	d		
			L307A			d	d	d	d		d	d		
			L308A			d	d	d	d		d	d		
			L309A			d	d	d	d		d	d		
			C311A			d	d	d	d		d	d		
			C312A			d	d	d	d		d	d		
			C313A			d	d	d	d		d	d		
			C314A			d	d	d	d		d	d		
			C315A			d	d	d	d		d	d		
			C316A			d	d	d	d		d	d		
			C317A			d	d	d	d		d	d		
			L318A			d	d	d	d		d	d		
			L319A			d	d	d	d		d	d		
			P401A			d	d	d	d		d	d		
			P402A			d	d	d	d		d	d		
			P403A			d	d	d	d		d	d		
			P410A			d	d	d	d		d	d		
			E401A			d	d	d	d		d	d		
			E402A			d	d	d	d		d	d		
			E411A			d	d	d	d		d	d		
			E403A			d	d	d	d		d	d		
			E404A			d	d	d	d		d	d		
			E412A			d	d	d	d		d	d		
			E405A			d	d	d	d		d	d		
			E406A			d	d	d	d		d	d		
			E407A			d	d	d	d		d	d		
			E408A			d	d	d	d		d	d		
			E410A			d	d	d	d		d	d		

GK: Group Work; SL: Self Learning; WC: Written Communication; OC: Oral Communication P:Presentation;B: Behavioural; IM: Information Management; PM: Personal Management L: Leadership; AO: Any other

30	**Co-curricular Activities** Studentsareencouraged totake partin co-curricularactivitieslikeseminars,conferences,symposia, paper writing,attendingindustryexhibitions,projectcompetitionsand related activitiesforenhancing their knowledgeandnetworking.
31	**CulturalandLiteraryActivities** Annualcultural festivals areheld toshowcasethecreativetalentsinstudents.Theyareinvolvedin planningandorganizing theactivities.
32	**Sportsand Athletics** Studentsareencouraged totake partinsportsand athleticeventsregularly. Annual sportsmeetwill beheld todemonstratesportsmanshipandcompetitivespirit.

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