

# **Programme Specifications**

## **B. Tech. Programme**



**Programme: Computer Science &  
Engineering**  
**Department: Computer Science & 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](http://www.msruas.ac.in)

**PROGRAMME SPECIFICATIONS: COMPUTER SCIENCE AND ENGINEERING**

<b>Faculty</b>	Engineering and Technology (FET)
<b>Department</b>	Computer Science and Engineering
<b>Programme</b>	Computer Science and Engineering
<b>Dean of Faculty</b>	Prof. H. K. Narahari
<b>Head of Department</b>	Prof. Raghavendra V. Kulkarni

1	<b>Title of the Award</b> B. Tech. in Computer Science and Engineering
2	<b>Modes of Study</b> Full Time
3	<b>Awarding Institution /Body</b> M. S. Ramaiah University of Applied Sciences
4	<b>Joint Award</b> Not Applicable
5	<b>Teaching Institution</b> Faculty of Engineering and Technology, M.S. Ramaiah University of Applied Sciences
6	<b>Date of Programme Specifications</b> February 2014
7	<b>Date of Programme Approval by the Academic Council of MSRUAS</b> April 2014
8	<b>Next Review Date:</b> March 2018
9	<b>Programme Approving Regulating Body and Date of Approval</b> --
10	<b>Programme Accredited Body and Date of Accreditation</b> --
11	<b>Grade Awarded by the Accreditation Body</b> --
12	<b>Programme Accreditation Validity</b> --
13	<b>Programme Benchmark</b> N/A
14	<b>Rationale for the Programme</b>  Computing and information technologies have not only touched all aspects of human existence but are also helping drive all modern human endeavors, most notably science and engineering practice. Advances in Computer Science and Engineering (CSE) field are enabling several disciplines such as bioinformatics, nanotechnology, interactive virtual worlds and intelligent systems. It is also contributing to methodological advances in most fields of study: from computational proofs of mathematical theorems through simulation based studies of physical, biological and engineering systems to virtual reality based psychology experiments. Algorithms and computing systems are responsible for processing voluminous data from space and atomic physics, simulation of earth climatic models and social networking sites. As a consequence, the field of CSE is dynamic and constantly evolving.  These diverse and demanding applications generate a constant demand for CSE professionals able to analyse and develop appropriate abstractions of the problems to be addressed, design appropriate architectures and components, implement as well as deploy solutions. While it has

	<p>commonalities with other Engineering disciplines, CSE is unique due to the fact that every final product (software) is almost completely hand crafted. Thus, an undergraduate programme in CSE should lay a strong and balanced foundation as well as the ability to synthesise working systems. Students have to be thorough in the underlying principles as well as the practical aspects of modern computing systems and information infrastructure preparing them for a career in the challenging and dynamic field.</p> <p>The Computer Science and Engineering programme at Faculty of Engineering and Technology at MSRUAS has been developed by the members of the faculty based on their teaching experience and long standing interactions with various universities and industries in India and abroad.</p> <p>The curriculum is outcome based and helps students to develop critical thinking abilities and imbibe relevant practical skills for a smooth transition from academics to real-life work environment. Opportunities are provided for the students to do their internship in India or abroad depending on their preferences.</p> <p>While most engineering colleges and universities across the world offer a CSE degree (or its equivalent), there is a shortage in quality graduates. The CSE programme is designed to produce creative and knowledgeable engineers with capabilities to innovate, design and develop computing and information technology solutions for diverse requirements of society, environment and human endeavors.</p>
15	<p><b>Programme Mission</b></p> <p>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</p>

16	<p><b>Graduate Attributes</b></p> <ol style="list-style-type: none"><li>1. Ability to apply knowledge of mathematics, science, and Engineering fundamentals to solve complex problems in engineering</li><li>2. Ability to analyse engineering problems, interpret data and arrive at meaningful conclusions involving mathematical inferences</li><li>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</li><li>4. Ability to understand and solve complex engineering problems by conducting experimental investigations</li><li>5. Ability to apply appropriate tools and techniques and understand utilization of resources appropriately to complex engineering activities</li><li>6. Ability to understand the effect of engineering solutions on legal, cultural, social and public health and safety aspects</li><li>7. Ability to develop sustainable solutions and understand their effect on society and environment</li><li>8. Ability to apply ethical principles to engineering practices and professional responsibilities</li><li>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</li><li>10. Ability to make effective oral presentations and communicate technical ideas to a broad audience using written and oral means</li><li>11. Ability to lead and manage multidisciplinary teams by applying engineering and management principles</li><li>12. Ability to adapt to the changes and advancements in technology and engage in independent and life-long learning</li></ol>
17	<p><b>Programme Goal</b></p> <p>The programme goal is to produce graduates with critical, analytical and problem solving skills, and ability to think independently, to pursue a career in Computer Science and Engineering.</p>

18	<p><b>Programme Objectives</b></p> <p>The programme will impart knowledge of computing and information technology systems and their sub systems; develop understanding of underlying logical, algorithmic, architectural and programming principles of computer science and engineering; teach modelling, simulation and analysis to study the performance of computing systems and develop the ability to design, build and test modern computing systems. It also trains students on personal development and interactive skills with professionals and feel for society.</p> <p>The objectives of the programme are:</p> <ol style="list-style-type: none"> <li>1. To facilitate the acquisition of knowledge in computing and information technology systems and their subsystems</li> <li>2. To develop understanding of the underlying logical, algorithmic, architectural and programming principles of computing systems</li> <li>3. To build the ability to design and implement computing and information systems to meet the specific application needs</li> <li>4. To model, simulate and analyse the behavior of computing and information systems to predict and improve their performance</li> <li>5. To train students on development of software products to meet specific customer needs</li> <li>6. To impart training on the processes and practice of engineering, deployment and operation of information technology infrastructure</li> <li>7. To impart training on professional ethics, history, economics, social sciences and interactive skills relevant to professional practice</li> <li>8. To provide a general perspective on lifelong learning and opportunities for a career in industry, business and commerce</li> </ol>
19	<p><b>Programme Intended Learning Outcomes</b></p> <p>The intended learning outcomes are listed under four headings:</p> <ol style="list-style-type: none"> <li>1. Knowledge and Understanding,</li> <li>2. Cognitive skills</li> <li>3. Practical skills and</li> <li>4. Capability / Transferable skills.</li> </ol> <p><b>Knowledge and Understanding</b></p> <p>After undergoing this programme, a student will be able to</p> <p>KU1: Identify and describe the various algorithms, architectures, programming paradigms and systems relevant to Computer Science and Engineering</p> <p>KU2: Explain the underlying logical and engineering principles that govern the Computer Science and Engineering systems/processes</p> <p>KU3: Compare and contrast newer approaches and technologies with the existing ones</p> <p>KU4: Understand the impact of engineering solution and accept professional, ethical, social, legal and economic responsibilities</p> <p><b>Cognitive Skills</b></p> <p>After undergoing this programme, a student will be able to</p> <p>CS1: Design and synthesise algorithms, architectures and programs for computing and information technology systems</p> <p>CS2: Model, simulate and analyse the computing and information technology systems</p> <p>CS3: Modify the existing algorithms, architectures and programs to meet newer requirements</p> <p>CS4: Apply scientific and engineering principles to evaluate computing systems and answer what if questions</p>

**Practical Skills**

After undergoing this programme, a student will be able to

PS1: Use the facilities of CASE tools and IDEs for software development life cycle activities

PS2: Employ appropriate tools for development and measurement of scientific and engineering systems

PS3: Deploy and configure standalone and distributed computing and information technology infrastructure

PS4: Operate computing, networking and information technology systems

**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

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**Programme Structure****Semester -1, Physics Cycle**

S.No.	Code	Course Title	Theory (h/W/S)	Tutorials (h/W/S)	Practical (h/W/S)	Total Credits	Max. Marks
1	BSC101A	Engineering Mathematics-1	3	2	0	4	100
2	BSC102B	Engineering Physics	3	2	0	4	100
3	ESC101A	Elements of Mechanical Engineering	3	0	0	3	100
4	ESC102A	Elements of Electronics Engineering	3	2	0	4	100
5	ESC103A	Engineering Drawing	1	0	4	3	100
6	BSC103B	Engineering Physics Laboratory	0	0	2	1	50
7	ESC104A	Basic Workshop Practice	0	0	2	1	50
8	ESC105A	Basic Electronics Laboratory	0	0	2	1	50
9	HSC101B	Sociology and Elements of Indian History	2	0	0	2	50
10	MCC101B	Technical Communication and Soft Skills	2	0	0	2	50
<b>Total</b>			<b>17</b>	<b>6</b>	<b>10</b>	<b>25</b>	<b>750</b>
<b>Total number of contact hours per week</b>			<b>33 hours</b>				
<b>Number of credits can be registered</b>			<b>Minimum</b>	<b>20</b>	<b>Maximum</b>	<b>25</b>	

**Semester -2**

S.No.	Code	Course Title	Theory (h/W/S)	Tutorials (h/W/S)	Practical (h/W/S)	Total Credits	Max. Marks
1	BSC104A	Engineering Mathematics-2	3	2	0	4	100
2	BSC105B	Engineering Chemistry	4	0	0	4	100
3	ESC106A	Construction Materials and Engineering Mechanics	3	2	0	4	100
4	ESC107A	Elements of Electrical Engineering	3	2	0	4	100
5	ESC108A	Elements of Computer Science and Engineering	3	2	0	4	100
6	ESC109A	Computer Programming Laboratory	0	0	2	1	50
7	BSC106B	Engineering Chemistry Laboratory	0	0	2	1	50
8	ESC110A	Basic Electrical Laboratory	0	0	2	1	50
9	HSC102B	Business Communication and Presentation Skill	2	0	0	2	50
10	MCC102A	Environmental Studies	2	0	0	2	50
<b>Total</b>			<b>20</b>	<b>8</b>	<b>6</b>	<b>27</b>	<b>750</b>
<b>Total number of contact hours per week</b>			<b>34 hours</b>				
<b>Number of credits can be registered</b>			<b>Minimum</b>	<b>22</b>	<b>Maximum</b>	<b>27</b>	

**Semester -1, Chemistry Cycle**

S.No.	Code	Course Title	Theory (h/W/S)	Tutorials (h/W/S)	Practical (h/W/S)	Total Credits	Max. Marks
1	BSC101A	Engineering Mathematics-1	3	2	0	4	100
2	BSC105B	Engineering Chemistry	4	0	0	4	100
3	ESC106A	Construction Materials and Engineering Mechanics	3	2	0	4	100
4	ESC107A	Elements of Electrical Engineering	3	2	0	4	100
5	ESC108A	Elements of Computer Science and Engineering	3	2	0	4	100
6	ESC109A	Computer Programming Laboratory	0	0	2	1	50
7	BSC106B	Engineering Chemistry Laboratory	0	0	2	1	50
8	ESC110A	Basic Electrical Laboratory	0	0	2	1	50
9	HSC102B	Business Communication and Presentation Skill	2	0	0	2	50
10	MCC102A	Environmental Studies	2	0	0	2	50
<b>Total</b>			<b>20</b>	<b>8</b>	<b>6</b>	<b>27</b>	<b>750</b>
<b>Total number of contact hours per week</b>			<b>34 hours</b>				
<b>Number of credits can be registered</b>			<b>Minimum</b>	<b>22</b>	<b>Maximum</b>	<b>27</b>	

**Semester -2**

S.No.	Code	Course Title	Theory (h/W/S)	Tutorials (h/W/S)	Practical (h/W/S)	Total Credits	Max. Marks
1	BSC104A	Engineering Mathematics-2	3	2	0	4	100
2	BSC102B	Engineering Physics	3	2	0	4	100
3	ESC101A	Elements of Mechanical Engineering	3	0	0	3	100
4	ESC102A	Elements of Electronics Engineering	3	2	0	4	100
5	ESC103A	Engineering Drawing	1	0	4	3	100
6	BSC103B	Engineering Physics Laboratory	0	0	2	1	50
7	ESC104A	Basic Workshop Practice	0	0	2	1	50
8	ESC105A	Basic Electronics Laboratory	0	0	2	1	50
9	HSC101B	Sociology and Elements of Indian History	2	0	0	2	50
10	MCC101B	Technical Communication and Soft Skills	2	0	0	2	50
<b>Total</b>			<b>17</b>	<b>6</b>	<b>10</b>	<b>25</b>	<b>750</b>
<b>Total number of contact hours per week</b>			<b>33 hours</b>				
<b>Number of credits can be registered</b>			<b>Minimum</b>	<b>20</b>	<b>Maximum</b>	<b>25</b>	



**Semester-3**

S.No.	Code	Course Title	Theory (h/W/S)	Tutorials (h/W/S)	Practical (h/W/S)	Total Credits	Max. Marks
1	BSC207A	Engineering Mathematics-3	3	2	0	4	100
2	CSC201A	Discrete Mathematics-1	3	2	0	4	100
3	CSC202A	Data Structures and Algorithms	3	2	0	4	100
4	CSC203A	Logic Design	3	0	0	3	100
5	CSC204A	Advanced Programming Concepts	3	0	0	3	100
6	CSC208A	Computer Organisation and Architecture	3	0	0	3	100
7	CSC205A	Data Structures and Algorithms Laboratory	0	0	2	1	50
8	CSC206A	Logic Design Laboratory	0	0	2	1	50
9	CSC207A	Advanced Programming Laboratory	0	0	2	1	50
10	MCC201B	Human Rights and Legislative Procedures	2	0	0	2	50
<b>Total</b>			<b>20</b>	<b>6</b>	<b>6</b>	<b>26</b>	<b>800</b>
<b>Total number of contact hours per week</b>			<b>32 hours</b>				
<b>Number of credits can be registered</b>			<b>Minimum</b>	<b>21</b>	<b>Maximum</b>	<b>26</b>	

**Semester-4**

S.No.	Code	Course Title	Theory (h/W/S)	Tutorials (h/W/S)	Practical (h/W/S)	Total Credits	Max. Marks
1	BSC208A	Engineering Mathematics-4	3	2	0	4	100
2	ECC201A	Signals and Systems	3	2	0	4	100
3	CSC209A	Design and Analysis of Algorithms	3	2	0	4	100
4	CSC210A	Software Development Fundamentals	3	0	0	3	100
5	CSC211A	Formal Languages and Automata Theory	3	0	0	3	100
6	CSC212A	Data Communication	3	2	0	4	100
7	HSC201A	Law for Engineers	2	0	0	2	50
8	CSC213A	Software Development Laboratory	0	0	2	1	50
9	CSC214A	Microprocessor and Assembly Programming Laboratory	0	0	2	1	50
<b>Total</b>			<b>20</b>	<b>8</b>	<b>4</b>	<b>26</b>	<b>750</b>
<b>Total number of contact hours per week</b>			<b>32 hours</b>				
<b>Number of credits can be registered</b>			<b>Minimum</b>	<b>21</b>	<b>Maximum</b>	<b>26</b>	

**Semester- 5**

S.No.	Code	Course Title	Theory (h/W/S)	Tutorials (h/W/S)	Practical (h/W/S)	Total Credits	Max. Marks
1	CSC301A	Discrete Mathematics-2	3	2	0	4	100
2	CSC302A	Operating Systems	3	0	0	3	100
3	CSC303A	Computer Networks	3	0	0	3	100
4	CSC304A	Computer Simulation	3	2	0	4	100
5	CSC305A	Programming Language Principles	3	2	0	4	100
6	HSC301A	Economics for Engineers	2	0	0	2	50
7	CSC306A	Operating Systems Laboratory	0	0	2	1	50
8	CSC307A	Computer Networks Laboratory	0	0	2	1	50
9	CSC308A	Computer Simulation Laboratory	0	0	2	1	50
<b>Total</b>			<b>17</b>	<b>6</b>	<b>6</b>	<b>23</b>	<b>700</b>
<b>Total number of contact hours per week</b>			<b>29 hours</b>				
<b>Number of credits can be registered</b>			<b>Minimum</b>	<b>18</b>	<b>Maximum</b>	<b>23</b>	

**Semester-6**

S.No.	Code	Course Title	Theory (h/W/S)	Tutorials (h/W/S)	Practical (h/W/S)	Total Credits	Max. Marks
1	CSC309A	Computer Graphics	3	2	0	4	100
2	CSC310A	Compilers	3	2	0	4	100
3	CSC311A	Database Systems	3	2	0	4	100
4	CSEXXA	Professional Core Elective-1	3	2	0	4	100
5	CSC312A	Compilers Laboratory	0	0	2	1	50
6	CSC313A	Database Systems Laboratory	0	0	2	1	50
7	CSCP31A	Project Work-1/Internship	0	0	16	8	50
<b>Total</b>			<b>12</b>	<b>8</b>	<b>20</b>	<b>26</b>	<b>550</b>
<b>Total number of contact hours per week</b>			<b>40 hours</b>				
<b>Number of credits can be registered</b>			<b>Minimum</b>	<b>21</b>	<b>Maximum</b>	<b>26</b>	

Note: Internship can be in any Industry, Business, University or Research organization in India or abroad.

**Semester-7**

S.No.	Code	Course Title	Theory (h/W/S)	Tutorials (h/W/S)	Practical (h/W/S)	Total Credits	Max. Marks
1	CSC401A	Computational Intelligence	3	2	0	4	100
2	CSC402A	Web Architecture and Application Development	3	2	0	4	100
3	CSEXXXA	Professional Core Elective-2	3	2	0	4	100
4	CSEXXXA	Professional Core Elective-3	3	2	0	4	100
5	OEC401A	Open Elective-1	3	0	0	3	100
6	OEC402A	Open Elective-2	3	0	0	3	100
7	CSC403A	Computational Intelligence Laboratory	0	0	2	1	50
8	CSC404A	Web Architecture and Application Development Laboratory	0	0	2	1	50
9	CSC405A	Seminar	0	0	2	1	50
<b>Total</b>			<b>18</b>	<b>8</b>	<b>6</b>	<b>25</b>	<b>750</b>
<b>Total number of contact hours per week</b>			<b>32 hours</b>				
<b>Number of credits can be registered</b>			<b>Minimum</b>	<b>20</b>	<b>Maximum</b>	<b>25</b>	

**Semester-8**

S.No.	Code	Course Title	Theory (h/W/S)	Tutorials (h/W/S)	Practical (h/W/S)	Total Credits	Max. Marks
1	CSEXXXA	Professional Core Elective-4	3	2	0	4	100
2	OEC403A	Open Elective-3	3	0	0	3	100
3	OEC404A	Open Elective-4	3	0	0	3	100
4	CSCP42A	Project Work-2	0	0	24	12	100
<b>Total</b>			<b>09</b>	<b>2</b>	<b>24</b>	<b>22</b>	<b>400</b>
<b>Total number of contact hours per week</b>			<b>35 hours</b>				
			<b>Minimum</b>	<b>17</b>	<b>Maximum</b>	<b>22</b>	

**Professional Core Electives:****1. Semester 6 group**

1. CSE301A: Distributed Systems
2. CSE302A: Network Programming and Simulation
3. CSE303A: Formal Methods and Applications
4. MEE408A: Quality Management and Six Sigma

**2. Semester 7 group**

1. CSE401A: Wireless Networks
2. CSE402A: Data Mining
3. CSE403A: Enterprise Computing
4. CSE404A: Real Time Embedded Systems
5. CSE405A: Topics in the theory of Computation
6. CSE406A: Software Engineering
7. MEE411A: Operations Research

**3. Semester 8 group**

1. CSE407A: Mobile Computing
2. CSE408A: Multimedia systems

	<ol style="list-style-type: none"> <li>3. CSE409A: Data Analytics</li> <li>4. CSE410A: Grid and Cloud Computing</li> <li>5. CSE411A: Information Security and Protection</li> <li>6. MEE415A: Manufacturing System Simulation</li> </ol> <p><b>Open Electives:</b></p> <p>A number of electives from faculty of engineering, management and commerce, art and design, hospitality management and catering technology, pharmacy, dental sciences will be announced one semester prior to the scheduled semester.</p>
21	<p><b>Programme Delivery</b></p> <p>As per the time Table</p>
22	<p><b>Teaching and Learning Methods</b></p> <ol style="list-style-type: none"> <li>1. Face to Face Lectures using Audio-Visuals</li> <li>2. Workshops-Group Discussions, Debates, Presentations</li> <li>3. Demonstrations</li> <li>4. Guest Lectures</li> <li>5. Laboratory-work/Field work/workshop</li> <li>6. Industry Visit</li> <li>7. Seminars</li> <li>8. Group Exercises</li> <li>9. Project work</li> <li>10. Project Exhibitions</li> <li>11. Technical Festivals</li> </ol>
23	<p><b>Assessment and Grading</b></p> <ol style="list-style-type: none"> <li>1. Every course will be assessed for a weight of 100</li> <li>2. There are two components-Component-1 and Component-2</li> <li>3. Component-1 carries a weight of 50% and Component -2 carries a weight of 50%</li> <li>4. Component -1 (CE) is subdivided into Term Tests and Assignments, tests carry 25% weight and assignment carry 25% weight.</li> <li>5. Component -2 is a written examination (SEE) carries 50% weight</li> <li>6. Laboratory Examination will have two components Component -1(CE): Conduction of Laboratory Exercises and Submission of Report: 50% weight Component -2: SEE (Semester End Laboratory Examination): 50% weight</li> <li>7. A minimum of overall 40% is required for a pass with 40% in each of the Components</li> <li>8. The marks distribution for each course is given in the programme structure- section 20</li> <li>9. Other flexibilities (exceptions) are as per the Academic Regulations of B. Tech. Programme.</li> </ol>
24	<p><b>Attendance</b></p> <p>A minimum of 85% attendance is compulsory to appear for semester end examinations. Condoning of attendance shortage is as per the Academic Regulations of B.Tech. Programme.</p>
25	<p><b>Award of Class</b></p> <p>As per the Academic Regulations of B.Tech. Programme</p>

26	<b>Student support for Learning</b> <ol style="list-style-type: none"><li>1. Course Notes</li><li>2. Reference Books in the Library</li><li>3. Magazines and Journals</li><li>4. Internet Facility</li><li>5. Computing Facility</li><li>6. Laboratory Facility</li><li>7. Workshop facility</li><li>8. Staff support</li><li>9. Lounges for Discussions</li><li>10. Any other support that enhances their learning</li></ol>
27	<b>Quality Control Measures</b> <ol style="list-style-type: none"><li>1. Review of Course Notes</li><li>2. Review of Question Papers and Assignment Questions</li><li>3. Student Feedback</li><li>4. Moderation of assessed work</li><li>5. Opportunities for students to see their assessed work</li><li>6. Review by external examiners and external examiners reports</li><li>7. Staff Student Consultative Committee meetings</li><li>8. Student exit feedback</li><li>9. Subject Assessment Board (SAB)</li><li>10. Programme Assessment Board (PAB)</li></ol>

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## Curriculum Map

Course Code						Intended Learning Outcomes											
						Knowledge and Understanding				Cognitive (Thinking) Skills (Critical, Analytical, Problem Solving)				Practical skills			
HSC	BSC	ESC	CSC	OEC	MCC	KU1	KU2	KU3	KU4	CS1	CS2	CS3	CS4	PS1	PS2	PS3	PS4
a	b	c	d	e	f												
101B	101A	101A	201A	401A	101B		bcd		abcdf		d		bd		bcd		
102B	102B	102A	202A	402A	102A	cd	bcd	d	abcdf	d	d	d	bd	d	bcd		
201A	103B	103A	203A	403A	201B	d	bcd		abcdf	d	d	a	bd	d	bcd		
301A	104A	104A	204A	404A		d	bcd	d	abcd	d	d	d	bd	d	bcd	d	d
	105B	105A	205A			cd	bcd	d	bcd	d	d	d	bd	d	bcd		
	106B	106A	206			d	bcd		bcd	d	d		bd	d	bcd		
	207A	107A	207A			cd	bcd	d	bcd	d	d	d	bd	d	bcd	d	d
	208A	108A	208A			cd	bcd	d	bcd	cd	cd	cd	bcd	d	bcd		
		109A	209A			cd	cd	d	cd	cd	cd	cd	cd	d	d		
		110A	210A			cd	cd		cd	d	d		d	d	d	d	d
			211A			d	d	d	d	d	d	d	d	d	d		
			212A			d	d	d	d	d	d	d	d	d	d		
			213A			d	d		d	d	d		d	d	d	d	d
			214A			d	d		d	d	d		d	d	d		
			301A			d	d		d	d	d				d		
			302A			d	d	d	d	d	d	d	d	d	d	d	d
			303A			d	d		d	d	d		d	d	d	d	d
			304A			d	d	d	d	d	d	d	d	d	d		
			305A			d	d	d	d	d	d	d	d	d	d		
			306A			d	d		d	d	d		d	d	d	d	d
			307A			d	d		d	d	d		d	d	d	d	d
			308A			d	d	d	d	d	d	d	d	d	d		
			309A			d	d		d	d	d		d	d	d		
			310A			d	d		d	d	d		d	d	d		
			311A			d	d	d	d	d	d	d	d	d	d	d	d
			312A			d	d		d	d	d		d	d	d		
			313A			d	d	d	d	d	d	d	d	d	d	d	d
			401A			d	d	d	d	d	d	d	d	d	d		
			402A			d	d	d	d	d	d	d	d	d	d	d	d
			403A			d	d		d	d	d		d	d	d		
			404A			d	d	d	d	d	d	d	d	d	d	d	d
			405A						d						d	d	d
			E301A			d	d	d	d	d	d	d	d	d	d	d	d
			E302A			d	d	d	d	d	d	d	d	d	d		
			E303A			d	d		d	d	d		d	d	d		
			E401A			d	d	d	d	d	d	d	d	d	d	d	d
			E402A			d	d	d	d	d	d	d	d	d	d	d	d
			E403A			d	d	d	d	d	d	d	d	d	d	d	d
			E404A			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	d	d
			E407A			d	d		d	d	d		d	d	d	d	d
			E408A			d	d		d	d	d		d	d	d	d	d
			E409A			d	d	d	d	d	d	d	d	d	d	d	d
			E410A			d	d	d	d	d	d	d	d	d	d	d	d
			E411A			d	d	d	d	d	d	d	d	d	d	d	d
			P31A			d	d	d	d	d	d	d	d	d	d	d	d
			P42A			d	d	d	d	d	d	d	d	d	d	d	d
			ECC201A			d	d	d	d	d	d	d	d	d	d		
<b>10</b>	<b>26</b>	<b>30</b>	<b>118</b>	<b>16</b>	<b>6</b>	<b>Total 206 credits</b>											

\*Depends on elective course chosen

29	Capability / Transferable Skills Map															
	Subject Code						Skills									
	HSC a	BSC b	ESC c	CSE d	OEC e	MCC f	GK	SL	WC	OC	P	B	IM	PM	L	AO
101B	101A	101A	201A	401A	101B	a	abcdef	abcdef	abcdef	abcdef	f	abcdef	abcdef			
102B	102B	102A	202A	402A	102A	a	abcdef	abcdef	abcdef	abcdef	a	abcdef	abcdef			
201A	103B	103A	203A	403A	201B	a	abcdef	abcdef	abcdef	abcdef	f	abcdef	abcdef			
301A	104A	104A	204A	404A		a	abcde	abcde	abcde	abcde	a	abcde	abcde			
	105B	105A	205A				bcd	bcd	bcd	bcd		bcd	bcd			
	106B	106A	206A				bcd	bcd	bcd	bcd		bcd	bcd			
	207A	107A	207A				bcd	bcd	bcd	bcd		bcd	bcd			
	208A	108A	208A				bcd	bcd	bcd	bcd		bcd	bcd			
		109A	209A				cd	cd	cd	cd		cd	cd			
		110A	210A				cd	cd	cd	cd		cd	cd			
			211A				d	d	d	d		d	d			
			212A				d	d	d	d		d	d			
			213A				d	d	d	d		d	d			
			214A				d	d	d	d		d	d			
			301A				d	d	d	d		d	d			
			302A				d	d	d	d		d	d			
			303A				d	d	d	d		d	d			
			304A				d	d	d	d		d	d			
			305A				d	d	d	d		d	d			
			306A				d	d	d	d		d	d			
			307A				d	d	d	d		d	d			
			308A				d	d	d	d		d	d			
			309A				d	d	d	d		d	d			
			310A				d	d	d	d		d	d			
			311A				d	d	d	d		d	d			
			312A				d	d	d	d		d	d			
			313A				d	d	d	d		d	d			
			401A				d	d	d	d		d	d			
			402A				d	d	d	d		d	d			
			403A				d	d	d	d		d	d			
			404A				d	d	d	d		d	d			
			405A				d		d	d		d	d			
			E301A				d	d	d	d		d	d			
			E302				d	d	d	d		d	d			
			E303A				d	d	d	d		d	d			
			E401A				d	d	d	d		d	d			
			E402A				d	d	d	d		d	d			
			E403A				d	d	d	d		d	d			
			E404A				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			
			E409A				d	d	d	d		d	d			
			E410A				d	d	d	d		d	d			
			E411A				d	d	d	d		d	d			
			P31A			d	d	d	d	d	d	d	d	d		
			P42A			d	d	d	d	d	d	d	d	d		
			ECC201A				d	d	d	d		d	d			

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

30	<b>Co-curricular Activities</b> Students are encouraged to take part in co-curricular activities like seminars, conferences, symposia, paper writing, attending industry exhibitions, project competitions and related activities for enhancing their knowledge and networking.
31	<b>Cultural and Literary Activities</b> Annual cultural festivals are held to showcase the creative talents in students. They are involved in planning and organizing the activities.
32	<b>Sports and Athletics</b> Students are encouraged to take part in sports and athletic events regularly. Annual sports meet will be held to demonstrate sportsmanship and competitive spirit.

