

# **Programme Specifications**

## **B. Tech. Programme**



**Programme: Electrical & Electronic  
Engineering**  
**Department: Electrical 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: ELECTRICAL AND ELECTRONIC ENGINEERING**

Faculty	Engineering and Technology (FET)
Department	Electrical Engineering
Programme	Electrical and Electronic Engineering
Dean of Faculty	Prof. H. K. Narahari
Head of Department	Prof. K. Manickavasagam

1	<b>Title of The Award</b> B. Tech. in Electrical and Electronic 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>  Electrical and Electronics Engineering is one of the most sought after disciplines of engineering. Electrical engineering plays a vital role in problems associated with systems such as electric power generation, transmission, distribution and utilization. Designing, manufacturing and testing of electrical machinery and equipment have been there world over for many decades. Electrical engineering is a foundational discipline, critical to the success of many human enterprises.  Electrical engineers are critical to power sector, design and development of energy systems and communication systems. Indeed, virtually every product or service in modern life has probably been

	<p>touched in some way by an electrical and electronics engineer. Electrical and Electronic engineers design, analyse, evaluate, develop, test and manufacture electrical products to meet the requirements of Power sector, Industry and society at large.</p> <p>The electrical 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>The faculty interacts with the industry and business offering engineering and consultancy, product design and development services along with training modules to practicing professionals. The above mentioned features of the programme and the faculty members' strong footing in industry and business make the programme unique. The student admitted to the programme in electrical engineering is given a strong foundation in real-life problem solving which is quite rare with many institutions offering similar programme.</p> <p>The Faculty of Engineering and Technology at MSRUAS would like to offer electrical and electronic engineering programme to produce imaginative, creative and innovative electrical and electronic engineers.</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> </ol>

	<ol style="list-style-type: none"><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 Electrical and Electronic Engineering.</p>
18	<p><b>Programme Objectives</b></p> <p>The programme will impart knowledge of electrical and electronic systems and their sub systems, enhances the understanding of underlying engineering principles that govern the behavior of electrical and electronic systems, teach analytical modelling, simulation and analysis to study the behavior of electrical and electronic systems, provide the skills to design, build and test electrical and electronic systems.</p>

	<p>The objectives of the programme are:</p> <ul style="list-style-type: none"> <li>○ To impart knowledge on electrical and electronic systems and their subsystems</li> <li>○ To enhance the understanding of the underlying engineering principles of electrical and electronic systems</li> <li>○ To model, simulate and analyze the behavior of electrical and electronic systems to predict and improve their performance</li> <li>○ To design and build models of electrical and electronic systems to meet the specific needs</li> <li>○ To impart training on instrumentation and testing of electrical and electronic systems</li> <li>○ To train on industry standard simulation tools for simulation and analysis of electrical and electronic systems</li> <li>○ To build and test electrical and electronic systems</li> <li>○ To impart training on professional ethics, history, economics, social sciences and interactive skills relevant to professional practice</li> <li>○ To provide a general perspective and opportunities for a career in industry, business and commerce</li> </ul>
19	<p><b>Programme Intended Learning Outcomes</b></p> <p>The intended learning outcomes are listed under four headings:</p> <p>1. Knowledge and Understanding, 2. Cognitive skills 3. Practical skills and 4. Capability/ Transferable skills.</p> <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 electrical and electronic systems</p> <p>KU2: Explain the underlying engineering principles that govern the electrical and electronic systems</p> <p>KU3: Compare and contrast newer technologies over the existing technologies</p> <p>KU4: Able to collect, classify information and interpret information</p>

**Cognitive Skills**

After undergoing this programme, a student will be able to

CS1: Design electrical and electronic systems and subsystems

CS2: Model, simulate and analyse the electrical and electronic systems

CS3: Able to modify the existing design to meet newer requirements

CS4: Apply engineering principles to evaluate performance of electrical and electronic systems and answer what if questions

**Practical Skills**

After undergoing this programme, a student will be able to

PS1: Analyse complex electrical component and assemble a complex electrical and electronic system

PS2: Instrument a electrical and electronic system and test its performance

PS3: Critically assess the operation or design of a simple power system

PS4: Design a high voltage insulation system for the test

**Capability/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>35 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>34 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	ECC201A	Signals & Systems	3	2	0	4	100
3	ECC202A	Electronic Circuits	3	2	0	4	100
4	ECC203A	Network Analysis and Synthesis	3	2	0	4	100
5	EEC201A	Measurements and Instrumentation	3	0	0	3	100
6	EEC202A	Electrical Machines-I	3	0	0	3	100
7	EEC203A	Electrical Machines-I Laboratory	0	0	2	1	50
8	EEC204A	Electrical Circuits & Measurements Laboratory	0	0	2	1	50
9	MCC201B	Human Rights and Legislative Procedures	2	0	0	2	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-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	ECC208A	Digital Logic Circuits	3	2	0	4	100
3	ECC209A	Electromagnetic Theory	3	2	0	4	100
4	ECC210A	Microprocessors and Microcontrollers	4	0	0	4	100
5	ECC211A	Solid State Devices	3	0	0	3	100
6	EEC205A	Electrical Power Generation	3	0	0	3	100
7	HSC201A	Law for Engineers	2	0	0	2	50
8	ECC212A	Digital Electronics Laboratory	0	0	2	1	50
9	ECC213A	Microprocessor Laboratory	0	0	2	1	50
<b>Total</b>			<b>21</b>	<b>6</b>	<b>4</b>	<b>26</b>	<b>750</b>
<b>Total number of contact hours per week</b>			<b>31 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	EEC301A	Transmission and Distribution	3	0	0	3	100
2	ECC302A	Digital Signal Processing	3	2	0	4	100
3	EEC302A	Electrical Machines-II	3	2	0	4	100
4	ECC304A	Linear Integrated Circuits	3	0	0	3	100
5	ECC305A	Control Systems	3	2	0	4	100
6	EEC303A	Switchgear and Protection	3	0	0	3	100
7	HSC301A	Economics for Engineers	2	0	0	2	50
8	EEC304A	Electrical Machines-II Laboratory	0	0	2	1	50
9	EEC305A	Control System Laboratory	0	0	2	1	50
<b>Total</b>			<b>20</b>	<b>06</b>	<b>04</b>	<b>25</b>	<b>750</b>
<b>Total number of contact hours per week</b>			<b>30 hours</b>				
<b>Number of credits can be registered</b>			<b>Minimum</b>	<b>20</b>	<b>Maximum</b>	<b>25</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	EEC306A	Electrical Machine Design	3	0	0	3	100
2	EEC307A	Power Electronics and Drives	3	0	0	3	100
3	EEC308A	Power System Analysis	3	2	0	4	100
4	EEEXXA	Professional Core Elective-1	3	2	0	4	100
5	EEEXXA	Professional Core Elective-2	3	2	0	4	100
6	EEC309A	Power Electronics and Drives	0	0	2	1	50
7	EECP31A	Project – 1/Internship	0	0	16	8	50
<b>Total</b>			<b>15</b>	<b>06</b>	<b>18</b>	<b>27</b>	<b>600</b>
<b>Total number of contact hours per week</b>			<b>39 hours</b>				
<b>Number of credits can be registered</b>			<b>Minimum</b>	<b>22</b>	<b>Maximum</b>	<b>27</b>	

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

**Semester-7**

S. No.	Code	Course Title	Theor y (h/W /S)	Tuto rials (h/W /S)	Practical (h/W/S)	Total Credits	Max. Marks
1	EEC401A	Design and Computer Aided Drawing of Electrical	2	2	0	3	100
2	EEC402A	High Voltage Engineering	3	0	0	3	100
3	EEEXXA	Professional Core Elective-3	3	2	0	4	100
4	EEEXXA	Professional Core Elective-4	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	EEC403A	High Voltage Laboratory	0	0	2	1	50
8	EEC404A	Power systems Simulation Laboratory	0	0	2	1	50
<b>Total</b>			<b>17</b>	<b>06</b>	<b>04</b>	<b>22</b>	<b>700</b>
<b>Total number of contact hours per week</b>			<b>27 hours</b>				
<b>Number of credits can be registered</b>			<b>Minimum</b>	<b>17</b>	<b>Maximum</b>	<b>22</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	EEEXXA	Professional Core Elective-5	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	EECP42A	Project Work -2	0	0	24	12	100
<b>Total</b>			<b>9</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>Number of credits can be registered</b>			<b>Minimum</b>	<b>17</b>	<b>Maximum</b>	<b>22</b>	

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

1. EEE301A: Power System Operation and Control
2. ECE416A Embedded Systems
3. EEE302A: Advanced Control Systems
4. ECE301A: Data Structures and Object Oriented Programming in C++
5. ECE302A: Biomedical Signal and Image Processing
6. ECE305A: Speech Processing
7. MEE407A: Supply Chain Management

	<p><b>Semester 7 group</b></p> <ol style="list-style-type: none"> <li>1. EEE401A:PLC and SCADA</li> <li>2. EEE402A: Fuzzy Logic Systems</li> <li>3. EEE403A: Industrial Drives and Applications</li> <li>4. EEE404A: Switched mode power supply</li> <li>5. ECC301A: Analog Communications</li> <li>6. ECE407A: Bio Instrumentation</li> <li>7. ECE413A: Image Processing</li> <li>8. ECE414A: Multimedia Processing</li> <li>9. MEE411A: Operations Research</li> </ol> <p><b>Semester 8 group</b></p> <ol style="list-style-type: none"> <li>1. EEE405A: Testing and Commissioning of Electrical Equipment</li> <li>2. EEE406A : EHV Transmission Systems</li> <li>3. ECC309A: Digital Communication</li> <li>4. ECE415A: Nano Electronics</li> <li>5. MEE408A : Quality Management and Six Sigma</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 compulsory to sit for semester end examinations. Any condoning 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	<p><b>Student support for Learning</b></p> <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	<p><b>Quality Control Measures</b></p> <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>

28		Curriculum Map															
Course Code						Intended Learning Outcomes											
						Knowledge and Understanding				Cognitive (Thinking) Skills (Critical, Analytical, Problem Solving)				Practical skills			
HSC	BSC	ESC	EEC	OEC	MCC	KU1	KU2	KU3	KU4	CS1	CS2	CS3	CS4	PS1	PS2	PS3	PS4
a	b	c	d	e	f												
101B	101A	101A	ECC201A*	401A	101B	d	bd	bcd	bcd	d	d	bcd	bd	d			
102B	102B	102A	ECC202A*	402A	102A	bcd	bcd	bc	bcd	bcd	bcd	bc	bcd	d			
201A	103B	103A	ECC203A*	403A	201B	d	d	bd	bcd	d	d	bd	d				
301A	104A	104A	201A	404A		d	bd		d	d	d		bd	d	d		
	105B	105A	202A			d	bd	bd	bd	d	d	bd	bd	c	cd	d	
	106B	106A	203A			c	c	c	cd	c	c	c	c	d	d	d	
	207A	107A	204A			cd	bcd	c	c	cd	cd	c	bcd	d	d		
	208A	108A	ECC208A*			bd	bd	d	cd	bd	bd	d	bd	bd			
		109A	ECC209A*				d		d				d				
		110A	ECC210A*				cd		d				cd	c		d	
			ECC211A*				d		d				d				
			ECC212A*			d				d	d				d		
			ECC213A*			d				d	d					d	
			205A			d	d	d	d	d	d	d	d	d			
			301A			d	d	d	d	d	d	d	d	d			
			ECC302A*					d	d			d					
			302A			d	d		d	d	d		d	d			
			ECC304A*			d			d	d	d						
			ECC305A*					d	d			d					
			303A			d	d		d	d	d		d				
			304A			d	d			d	d		d	d	d		
			305A											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	
			309A			d	d			d	d		d	d	d		
			401A				d	d	d			d	d	d		d	
			402A			d	d	d		d	d	d	d	d			
			403A			d				d	d			d			d
			404A			d				d	d						
			EEE01A**														
			EEE02A**														
			EEE03A**														
			EEE04A**														
			EEE05A**														
			P31A			d	d	d	d	d	d	d	d	d	d	d	
			P42A			d	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>06</b>	<b>Total 206 credits</b>											
<b>EEE ** Depends on elective course chosen</b>																	



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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.
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