

**SECOND YEAR ELECTRONICS AND COMPUTER SCIENCE  
PROGRAM PROPOSED SCHEME OF INSTRUCTION AND  
EXAMINATION, REVISED COURSE (2019-2020) Implemented from 2023-24  
Semester III**

Course Code	Nomenclature of the Course	Scheme of Instruction Hrs./Week			Scheme of Examination						
		L	T	P#	Duration (Hrs.)	Marks				Credits	
						Th	IA	TW**	P		Total
ECS310	Essential Mathematics for Engineers	3	--	--	3	100	25	--	--	125	3
ECS320	Electrical Circuits and Systems	4	--	--	3	100	25	--	--	125	4
ECOMP330	Electronic Devices and Circuits	3	1	--	3	100	25	25	--	150	4
ECOMP340	Digital Electronics	3	1	--	3	100	25	25	--	150	4
ECOMP350	Data Structures and Algorithms using C++	3	--	--	3	100	25	--	--	125	3
ECS360	Electronic Devices and Circuits Lab	--	--	2	--	--	--	25	25	50	1
ECOMP370	Data Structures and Algorithms using C++ Lab	--	--	2	--	--	--	25	25	50	1
ECS380	Digital Electronics Lab	--	--	2	--	--	--	25	25	50	1
HM012	Technical Writing and Professional Communication	1	1	--	--	--	--	75	--	75	2
AC390	Mathematics-I and II (Bridge Course*)	2	--	--	--	--	--	--	--	--	--
	<b>TOTAL</b>	<b>19</b>	<b>3</b>	<b>6</b>	<b>--</b>	<b>500</b>	<b>125</b>	<b>200</b>	<b>75</b>	<b>900</b>	<b>23</b>

**L-Lecture T-Tutorial P-Practical Th-Theory TW-Term Work IA-Internal Assessment**

**\*Applicable to direct second year /lateral entry students.**

**\*\*Term Work marks are to be awarded through continuous evaluation**

# A candidate is considered to have successfully fulfilled the requirement of a semester, provided he/ she submits to the department a certified journal reporting the experiments conducted during the semester.

**SECOND YEAR ELECTRONICS AND COMPUTER SCIENCE  
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REVISED COURSE (2019-2020)**

**Semester IV**

Course Code	Nomenclature of the Course	Scheme of Instruction Hrs./Week			Scheme of Examination						
		L	T	P#	Duration (Hrs.)	Marks				Credits	
						Th	IA	TW**	P		Total
ECS410	Signal Processing Fundamentals	3	1	--	3	100	25	25	--	150	4
ECS420	Computer Organization & Operating Systems	4	0	--	3	100	25	--	--	125	4
ECS430	Analog Electronics & Instruments	3	1	--	3	100	25	25	--	150	4
ECS440	Microprocessors & Microcontrollers	3	--	--	3	100	25	--	--	125	3
ECOMP450	Java Programming	3	--	--	3	100	25	--	--	125	3
ECS460	JAVA Programming Lab	--	--	2	--	--	--	25	25	50	1
ECOMP470	Analog Circuits Design Lab	--	--	2	--	--	--	25	25	50	1
ECS480	Microcontrollers Lab	--	--	2	--	--	--	25	25	50	1
HM013	Business Economics and Management	3	--	--	3	100	25	--	--	125	3
	<b>TOTAL</b>	<b>19</b>	<b>2</b>	<b>6</b>	<b>--</b>	<b>600</b>	<b>150</b>	<b>125</b>	<b>75</b>	<b>950</b>	<b>24</b>

L-Lecture T-Tutorial P-Practical

Th-Theory TW-Term Work

IA-Internal Assessment

\*\*Term Work marks are to be awarded through continuous evaluation

# A candidate is considered to have successfully fulfilled the requirement of a semester, provided he/ she submits to the department a certified journal reporting the experiments conducted during the semester.

**THIRD YEAR ELECTRONICS AND COMPUTER SCIENCE PROGRAM  
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REVISED COURSE (2019-2020)**

**Semester V**

Course Code	Nomenclature of the Course	Scheme of Instruction Hrs./Week			Scheme of Examination						
		L	T	P	Duration(Hrs.)	Marks					Credits
						Th	IA	TW**	P	Total	
ECS510	Electronic Communication Systems	4	--	--	3	100	25	--	--	125	4
ECS520	Database Systems Concepts	3	--	--	3	100	25	--	--	125	3
ECS531	Open Source Software Development										
ECOMP532	Software Engineering										
ECOMP533	Soft Computing	3	--	--	3	100	25	--	--	125	3
ECOMP534	Design and Analysis of Algorithms										
ECOMP535	Computer Graphics										
ECOMP541	Control System Engineering										
ECOMP542	Power Electronics										
ECS543	Digital Signal Processing and Applications	3	--	--	3	100	25	--	--	125	3
ECS544	Transmission Lines and Antennas										
ECOMP545	Consumer Electronics										
ECOMP550	Web Technology Lab	--	--	2	--	--	--	25	25	50	1
ECS560	Database Systems Lab	--	--	2	--	--	--	25	25	50	1
ECS570	Professional Elective Lab - I	--	--	2	--	--	--	25	25	50	1
*	Open Elective	3	--	--	3	100	25	--	--	125	3
HM009	Ethics & Entrepreneurship	3	--	--	3	100	25	--	--	125	3

	<b>TOTAL</b>	<b>19</b>	<b>0</b>	<b>6</b>	<b>--</b>	<b>600</b>	<b>150</b>	<b>75</b>	<b>75</b>	<b>900</b>	<b>22</b>
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L-Lecture T-Tutorial P-Practical Th-Theory TW-Term Work

IA-Internal Assessment

**\*\*Term Work marks are to be awarded through continuous evaluation**

# A candidate is considered to have successfully fulfilled the requirement of a semester, provided he/ she submits to the department a certified journal reporting the experiments conducted during the semester.

\* Students may enter the subject code of the open elective selected from the courses of other branch of Engineering.

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**Semester VI**

Course Code	Nomenclature of the Course	Scheme of Instruction Hrs./Week			Scheme of Examination						Credits
		L	T	P#	Duration (Hrs.)	Marks					
						Th	IA	TW**	P	Total	
ECS610	VLSI Design and Technology	4	--	--	3	100	25	--	--	125	4
ECS620	Introduction to Computer Networks	3	--	--	3	100	25	--	--	125	3
ECS631	Neural Networks and Deep Learning	3	--	--	3	100	25	--	--	125	3
ECOMP632	Augmented Reality and Virtual Reality										
ECOMP633	Mobile Phone Programming										
ECOMP634	Software Testing and Quality Assurance										
ECS635	Introduction to Cloud Computing										
ECOMP641	Digital Image Processing	3	--	--	3	100	25	--	--	125	3
ECOMP642	Information Theory and Coding										
ECOMP643	Advanced Microcontroller										
ECS644	Industrial Automation and Control										
ECOMP645	Robotics										
ECOMP650	VLSI Design Lab	--	--	2	--	--	--	25	25	50	1

ECOMP660	Computer Networks Lab	--	--	2	--	--	--	25	25	50	1
ECS670	Professional Elective Lab- II	--	--	2	--	--	--	25	25	50	1
*	Open Elective	3	--	--	3	100	25	--	--	125	3
HM006	Cyber Law & IPR	3	--	--	3	100	25	--	--	125	3
	<b>TOTAL</b>	<b>19</b>	<b>0</b>	<b>6</b>	<b>--</b>	<b>600</b>	<b>150</b>	<b>75</b>	<b>75</b>	<b>900</b>	<b>22</b>

L-Lecture T-Tutorial P-Practical

Th-Theory TW-Term Work

IA-Internal Assessment

**\*\*Term Work marks are to be awarded through continuous evaluation**

# A candidate is considered to have successfully fulfilled the requirement of a semester, provided he/ she submits to the department a certified journal reporting the experiments conducted during the semester.

\* Students may enter the subject code of the open elective selected from the courses of other branch of Engineering.

**FOURTH YEAR ELECTRONICS AND COMPUTER SCIENCE PROGRAM  
PROPOSED SCHEME OF INSTRUCTION AND EXAMINATION,  
REVISED COURSE (2019-2020)  
Semester VII**

Course Code	Nomenclature of the Course	Scheme of Instruction n Hrs./Week			Scheme of Examination						
		L	T	P#	Duration (Hrs.)	Marks					Credits
						Th	IA	TW**	O	Total	
ECS710	Discrete Structures and Automata Theory	3	--	--	3	100	25	--	--	125	3
ECOMP721	Block chain Technology	3	--	--	3	100	25	--	--	125	3
ECOMP722	Machine Learning										
ECOMP723	Hardware Descriptive Languages										
ECOMP724	Wireless Sensor Networks										
ECS725	Microwave and Radar Engineering										
ECS730	Professional Elective Lab- III	--	--	2	--	--	--	25	25	50	1
*	Open Elective	3	--	--	3	100	25	--	--	125	3
ECS740	Internship	--	--	6	--	--	--	50	50	100	3
ECS750	Project Work - Phase I	--	--	6	--	--	--	50	75	125	3

ECS760	Electronic System Design & Manufacturing Lab	--	--	2	--	--	--	25		25	1
<b>TOTAL</b>		<b>9</b>	<b>--</b>	<b>16</b>	<b>--</b>	<b>300</b>	<b>75</b>	<b>150</b>	<b>150</b>	<b>675</b>	<b>17</b>

L-Lecture T-Tutorial P-Practical Th-Theory TW-Term Work IA-Internal Assessment

**\*\*Term Work marks are to be awarded through continuous evaluation**

# A candidate is considered to have successfully fulfilled the requirement of a semester, provided he/ she submits to the department a certified project report of the work done during the semester.

\* Students may enter the subject code of the open elective selected from the courses of other branch of Engineering.

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**Semester VIII**

Course Code	Nomenclature of the Course	Scheme of Instruction Hrs./Week			Duration (Hrs.)	Scheme of Examination						Credits
		L	T	P		Marks						
						Th	IA	TW**	O	OCS	Total	
ECOMP810	Cryptography and Network Security	3	--	--	3	100	25	--	-	-	125	3
ECOMP821	Compiler Design											
ECS822	Advanced Communication Systems											
ECOMP823	Biomedical Electronics & Instrumentation	3	--	--	3	100	25	--	-	-	125	3
ECOMP824	Internet of Things											
ECOMP825	Data Analytics											
ECS830	Elective - NPTEL/ MOOC/ SWAYAM	3	--	--	--	--	--	25#	-	75#	100	3
ECS840	Project Work - Phase II	--	--	18	--	--	--	200	200	-	400	9
<b>TOTAL</b>		<b>9</b>	<b>--</b>	<b>18</b>	<b>--</b>	<b>200</b>	<b>50</b>	<b>225</b>	<b>200</b>	<b>75</b>	<b>750</b>	<b>18</b>

**\*\*Term Work marks are to be awarded through continuous evaluation**

# Students should mandatorily undertake one NPTEL Course of only 3 credits from the list of approved

Online courses of Goa University to be offered during the V/ VI/VII Semester.

# Online Assignments Score obtained will be considered/scaled accordingly for Term Work (TW) and Proctored Exam Score will be considered/scaled accordingly for Online Course Score(OCS) of

NPTEL / MOOC / SWAYAM certification course. The score obtained shall be rounded to near higher integer.

**LEGEND**

<b>Abbreviation</b>	<b>Description</b>
<b>L</b>	<b>Lecture</b>
<b>T</b>	<b>Tutorial</b>
<b>P</b>	<b>Practical</b>
<b>O</b>	<b>Oral</b>
<b>Th</b>	<b>Theory</b>
<b>TW</b>	<b>Term Work</b>
<b>IA</b>	<b>Internal assessment</b>
<b>OCS</b>	<b>Online Course Score</b>