



## **SCHOOL OF ENGINEERING & TECHONOLGY (SOET)**

### **BACHELOR OF TECHNOLOGY (B.Tech) PROGRAMME STRUCTURE-2023**

T: 080-25426977 / 6988 M: 7022007674 F: 080-25427840

E: [info@cmr.edu.in](mailto:info@cmr.edu.in) [www.cmr.edu.in](http://www.cmr.edu.in)

## B.Tech. CSE

### I Semester (Physics Cycle)

Course	CMRU Category	CMRU Subcategory	AICTE Category	School/ Department	Contact Hours/ Week	Credit Distribution L-T-P-C
<b>Program Core</b>						
Engineering Mathematics I	Foundation	FC	BSC	BS	4	3-1-0-4
Engineering Physics	Foundation	FC	BSC	BS	5	3-0-1-4
Elements of Electrical & Electronics Engineering	Foundation	FC	ESC	ECE	4	3-1-0-4
Elements of Computer Engineering	Foundation	FC	ESC	CSE	3	3-0-0-3
Computer Aided Engineering Drawing	Foundation	FC	ESC	ME	5	1-0-2-3
<b>Common Core</b>						
Design Thinking-1	PS	-	HSMC	DCCC	(30)	0-0-2-2
Oral and Written Communication	PS	-	HSMC	DCCC	4	4-0-0-4
Community Service -I (COS - I)	CPC	-	SDC	DCCC	(30)	0-0-1-1*
<b>TOTAL</b>					<b>29</b>	<b>24 + 1*</b>
<b>Audit Course</b>						
		-				
<b>Common Core (Non-Credit) - Graduate Requirement:</b>						
<b>Nil</b>						

*\*The Community Service-I (COS-I) of 30 hours has to be carried out in the I Semester. The corresponding I credit and the CIE will be reflected in the VIII Semester.*

## II Semester (Physics Cycle)

Course	CMRU Category	CMRU Subcategory	AICTE Category	School/ Department	Contact Hours/ Week	Credit Distribution L-T-P-C
<b>Program Core</b>						
Engineering Mathematics II	Foundation	FC	BSC	BS	4	3-1-0-4
Engineering Chemistry	Foundation	FC	BSC	BS	3	1-0-1-2
Elements of Mechanical Engineering and Workshop	Foundation	FC	ESC	ME	4	2-0-1-3
Elements of Civil Engineering	Foundation	FC	ESC	CE	3	2-1-0-3
Problem solving using Python (MOOC)	Foundation	FC	ESC	CSE	4	2-0-1-3
<b>Common Core</b>						
Design Thinking -2	PS	-	HSMC	DCCC	(30)	0-0-2-2
Kan/Eng/Hin/FL	PS	-	HSMC	DCCC	2	2-0-0-2
Community Service - II (COS - II)	CS	-	SDC	DCCC	(30)	0-0-1-1*
<b>TOTAL</b>					<b>24</b>	<b>19 + 1*</b>
<b>Audit Course</b>						
		-				
<b>Common Core (Non-Credit) - Graduate Requirement: GPSDR1081: Personal Effectiveness</b>						

† Internship- I of 3 credits to be carried out between II and III Semester break. The corresponding 3 credits will be reflected in the VIII Semester.

\*The Community Service-II (COS-II) of 30 hours has to be carried out in the II Semester. The corresponding 1 credit and the CIE will be reflected in the VIII Semester.

## I Semester (Chemistry Cycle)

Course	CMRU Category	CMRU Subcategory	AICTE Category	School/ Department	Contact Hours/ Week	Credit Distribution L-T-P-C
<b>Program Core</b>						
Engineering Mathematics I	Foundation	FC	BSC	BS	4	3-1-0-4
Engineering Chemistry	Foundation	FC	BSC	BS	3	1-0-1-2
Elements of Mechanical Engineering and Workshop	Foundation	FC	ESC	ME	4	2-0-1-3
Elements of Civil Engineering	Foundation	FC	ESC	CE	3	2-1-0-3
Problem solving using Python (MOOC)	Foundation	FC	ESC	CSE	4	2-0-1-3
<b>Common Core</b>						
Design Thinking -1	PS	-	HSMC	DCCC	(30)	0-0-2-2
Kan/Eng/Hin/FL	PS	-	HSMC	DCCC	2	2-0-0-2
Community Service - I (COS - I)	CS	-	SDC	DCCC	(30)	0-0-1-1*
<b>TOTAL</b>					<b>26</b>	<b>19 + 1*</b>
<b>Audit Course</b>						
		-				
<b>Common Core (Non-Credit) - Graduate Requirement:</b> Nil						

\*The Community Service-I (COS-I) of 30 hours has to be carried out in the I Semester. The corresponding 1 credit and the CIE will be reflected in the VIII Semester.

## II Semester (Chemistry Cycle)

Course	CMRU Category	CMRU Subcategory	AICTE Category	School/ Department	Contact Hours/ Week	Credit Distribution L-T-P-C
<b>Program Core</b>						
Engineering Mathematics II	Foundation	FC	BSC	BS	4	3-1-0-4
Engineering Physics	Foundation	FC	BSC	BS	5	3-0-1-4
Elements of Electrical & Electronics Engineering	Foundation	FC	ESC	EE	4	3-1-0-4
Elements of Computer Engineering	Foundation	FC	ESC	CSE	3	3-0-0-3
Computer Aided Engineering Drawing	Foundation	FC	ESC	ME	5	1-0-2-3
<b>Common Core</b>						
Design Thinking-2	PS	-	HSMC	DCCC	(30)	0-0-2-2
Community Service -II (COS -I I)	CPC	-	SDC	DCCC	(30)	0-0-1-1*
Oral and Written Communication	PS	-	HSMC	DCCC	4	4-0-0-4
<b>TOTAL</b>					<b>27</b>	<b>24 + 1*</b>
<b>Audit Course</b>						
		-				
<b>Common Core (Non-Credit) - Graduate Requirement: GPSDR1081: Personal Effectiveness</b>						

‡ Internship- I of 3 credits to be carried out between II and III Semester break. The corresponding 3 credits will be reflected in the VIII Semester.

\*The Community Service-II (COS-II) of 30 hours has to be carried out in the II Semester. The corresponding 1 credit and the CIE will be reflected in the VIII Semester.

### III Semester

Course	CMRU Category	CMRU Subcategory	AICTE Category	School/ Department	Contact Hours/Week	Credit Distribution L-T-P-C	
<b>Program Core</b>							
Discrete Mathematical Structures and Applications	Foundation	FC	PCC	BS	4	3-1-0-4	
Problem solving and programming using C	Foundation	FC	PCC	CSE	3	1-0-1-2	
Data Structures	Foundation	FC	PCC	CSE	5	3-0-1-4	
Web Development using Python and Django (P)	Foundation	IC	PCC	CSE	4	2-0-1-3	
Making with Electronics	PS	-	ESC	ECE	5	1-0-2-3	
Foundation		Internship- I†	PROJ	CSE			
<b>Common Core</b>							
Critical Inquiry		CC	-	SDC	DCCC	1	1-0-0-1
Community Service -III (COS - III) *		CS			DCCC	(30)	0-0-1-1*
<b>TOTAL</b>					<b>23</b>	<b>17 + 1*</b>	
<b>Audit Course</b>							
			-				
<b>Common Core (Non-Credit) - Graduate Requirement:</b> <b>GPSBD1171-</b> <b>GPSBA1081 - Career Preparedness Program-I (Career essentials + Prepare for Aptitude Tests-I)</b>							

† Internship - I credits are reflected in the VIII Semester.

\*The Community Service-III (COS-III) of 30 hours has to be carried out in the III Semester. The corresponding 1 credit and the CIE will be reflected in the VIII Semester.

## IV Semester

Course	CMRU Category	CMRU Subcategory	AICTE Category	School/ Department	Contact Hours/Week	Credit Distribution L-T-P-C
<b>Program Core</b>						
Mathematics IV	Foundation	FC	BSC	BS	4	3-1-0-4
Python for Data Science(P)	Foundation	IC	PCC	CSE	4	2-0-1-3
Database Management Systems	Foundation	IC	PCC	CSE	4	2-0-1-3
Theory of Computation	Foundation	IC	PCC	CSE	3	3-0-0-3
Object Oriented Programming with Java	Foundation	IC	PCC	CSE	5	3-0-1-4
<b>Common Core</b>						
Arts & Philosophy	KSC	-	MC	DCCC	1	1-0-0-1
Indian Constitution	KSC	-	MC	DCCC	2	2-0-0-2
Community Service -IV (COS - IV) *	CS	-	SDC	DCCC	(30)	0-0-1-1*
<b>TOTAL</b>					<b>24</b>	<b>20 + 1*</b>
<b>Audit Course</b>						
		-				
<b>Common Core (Non-Credit) - Graduate Requirement: GPSBD1191 - GPSBA1091 - Career Preparedness Program-II (Career Readiness + Prepare for Aptitude Tests-II)</b>						

† Internship- II of 3 credits to be carried out between IV and V Semester break. The corresponding 3 credits will be reflected in the VIII Semester.

\*The Community Service-IV (COS-IV) of 30 hours has to be carried out in the IV Semester. The corresponding 1 credit and the CIE will be reflected in the VIII Semester.

## V Semester

Course	CMRU Category	CMRU Subcategory	AICTE Category	School/ Department	Contact Hours/Week	Credit Distribution L-T-P-C
<b>Program Core</b>						
Operating Systems	Foundation	IC	PCC	CSE	4	2-0-1-3
Design and Analysis of Algorithms (P)	Foundation	IC	PCC	CSE	4	2-0-1-3
Computer Organization and Architecture	Foundation	IC	PCC	CSE	3	3-0-0-3
Open Elective 1	Elective	IC	OEC	N/A	3	3-0-0-3
Professional Elective 1	Elective	IC	PEC	CSE	3	x-x-x-3
	Interdisciplinary Elective1	IDE	OEC		3	x-x-x-3
	Foundation	Internship-II†	PROJ	CSE		
<b>Common Core</b>						
Environment and Sustainability	KSC	-	HSMC	DCCC	2	2-0-0-2
<b>TOTAL</b>					<b>22</b>	<b>20</b>
<b>Audit Course</b>						
		-				
<b>Common Core (Non-Credit) - Graduate Requirement: GPSBA1101 - Prepare for Aptitude Tests - III</b>						

† Internship - II credits are reflected in the VIII Semester



**PROFESSIONAL ELECTIVE-1: DATA SCIENCE**

4CSPL3021	Advanced Python for AI (MOOC)
4CSGC3081	Data Mining
4CSPL3031	R Language (MOOC)

**PROFESSIONAL ELECTIVE-1: CYBER SECURITY**

4CSGC3041	Cryptography (MOOC)
4CSGC3051	Software Security (MOOC)
4CSGC3061	Secure Coding

**PROFESSIONAL ELECTIVE-1: APPLICATION DEVELOPMENT**

4CSPL3041	Advanced Java
4CSPL3051	Scripting Languages (MOOC)
4CSPL3061	Kotlin (OO+Functional)(MOOC)

**PROFESSIONAL ELECTIVE-1: NETWORKING**

4CSPL3071	Network programming in Unix & C (MOOC)
4CSGC2072	Cloud Computing
4CSPL3081	Python for Networking (MOOC)
4CSGC3071	Client-Server Technologies

**OPEN ELECTIVE-1**

4CSPL2061	Object Oriented Programming
4CSGC2011	Database Management Systems
4CSGC1021	Office Automation (MOOC)

**VI Semester**

Course	CMRU Category	CMRU Subcategory	AICTE Category	School/Department	Contact Hours/Week	Credit Distribution L-T-P-C
<b>Program Core</b>						
Data Communication & Computer Networks	Foundation	IC	PCC	CSE	4	2-0-1-3
Introduction to Machine Learning (P)	Foundation	IC	PCC	CSE	4	2-0-1-3

Software Engineering	Foundation	IC	PCC	CSE	3	3-0-0-3
Open Elective 2	Elective	IC	OEC	N/A	3	3-0-0-3
Professional Elective 2	Elective	IC	PEC	CSE	3	x-x-x-3
	Interdisciplinary Elective 2	IDE	OEC		3	x-x-x-3
<b>Common Core</b>						
Sociology of Globalization and sustainable development	CS	-	HSMC	Mgmt	2	2-0-0-2
<b>TOTAL</b>					<b>22</b>	<b>20</b>
<b>Audit Course</b>						
		-				
<b>Common Core (Non-Credit) - Graduate Requirement: GPSBA1111 - GPSBD1201 - Career Preparedness Program-III (Career Insights + Prepare for Aptitude Tests-IV)</b>						

† Internship- III of 3 credits to be carried out between VI and VII Semester breaks. The corresponding 3 credits will be reflected in the VIII Semester.

<b>PROFESSIONAL ELECTIVE-2: DATA SCIENCE</b>	
4CSGC3121	Soft Computing (Fuzzy, Genetic, Ontologies) (MOOC)
4CSPL3091	No-SQL Databases
4CSPL3101	Applied Machine Learning (MOOC)

<b>PROFESSIONAL ELECTIVE-2: CYBER SECURITY</b>	
4CSGC3131	System Security
4CSGC3141	Ethical Hacking (MOOC)
4CSGC3151	Malware analysis (MOOC)

<b>PROFESSIONAL ELECTIVE-2: APPLICATION DEVELOPMENT</b>	
4CSPL3111	Object Oriented Analysis Design
4CSPL3121	Web Technology Frameworks (MOOC)
4CSPL3131	Application Development using MERN Stack (MOOC)

<b>PROFESSIONAL ELECTIVE-1: NETWORKING</b>	
4CSPL3141	Advanced Computer Networks
4CSGC3161	Wireless Technologies (MOOC)
4CSGC3171	Multimedia Networking (MOOC)

<b>OPEN ELECTIVE-2</b>	
4CSPL2071	Web Technology (MOOC)
4CSPL2051	Mobile Application Development (MOOC)
4CSGC2101	Machine Learning for Beginners

## VII Semester

Course	CMRU Category	CMRU Subcategory	AICTE Category	School/ Department	Contact Hours/Week	Credit Distribution L-T-P-C
<b>Program Core</b>						
Artificial Intelligence	Foundation	AC	PCC	CSE	3	3-0-0-3
Mobile Application Development (P)	Foundation	AC	PCC	CSE	5	3-0-1-4
Professional Elective 3	Elective	AC	PEC	CSE	3	x-x-x-3
Professional Elective 4	Elective	AC	PEC	CSE	3	x-x-x-3
Business Management for Engineers	PS	-	HSMC	Mgmt	1	1-0-0-1
	Inter disciplinary Elective 3	IDE	OEC		3	x-x-x-3
	Foundation	Capstone Project Phase I	PROJ	CSE		
	Foundation	Internship-III <sup>7</sup>	PROJ	CSE		
<b>Common Core</b>						
Ethics & Values	CC	-	HSMC	DCCC	2	2-0-0-2
<b>TOTAL</b>					<b>20</b>	<b>19</b>

<b>Audit Course</b>							
			-				
<b>Common Core (Non-Credit) - Graduate Requirement: GPSDL1061 - Career Advancement</b>							

† Internship - III credits are reflected in the VIII Semester.

<b>PROFESSIONAL ELECTIVE–3,4: DATA SCIENCE</b>	
4CSPL4021	Deep Learning (MOOC)
4CSPL4031	Big Data and Analytics (MOOC)
4CSPL4041	Robotic Process Automation (MOOC)
4CSPL4051	Natural Language Processing

<b>PROFESSIONAL ELECTIVE–3,4: CYBER SECURITY</b>	
4CSPL4061	Mobile Computing Security (MOOC)
4CSPL4071	Digital Forensics (MOOC)
4CSPL4081	Cloud Computing Security (MOOC)
4CSPL4091	Web Security

<b>PROFESSIONAL ELECTIVE–3,4: APPLICATION DEVELOPMENT</b>	
4CSPL4101	J2EE Technologies (MOOC)
4CSPL4111	.NET Technologies (MOOC)
4CSPL4121	JavaScript
4CSPL4131	Microservices (MOOC)

<b>PROFESSIONAL ELECTIVE–3,4: NETWORKING</b>	
4CSPL4141	Software Defined Networks
4CSPL4151	Storage Area Networks (MOOC)
4CSPL4161	Virtualization & Cloud Computing (MOOC)
4CSPL4171	Network Administration (MOOC)

## VIII Semester

Course	CMRU Category	CMRU Subcategory	AICTE Category	School/ Department	Contact Hours/Week	Credit Distribution L-T-P-C
<b>Program Core</b>						
Capstone Project Phase II	Foundation	Capstone	PCC	CSE	-	x-x-x-8
Internship- I†	Foundation	Internship	PCC	CSE	-	x-x-x-3

Internship- II†	Foundation	Internship	PCC	CSE	-	x-x-x-3
Internship- III†	Foundation	Internship	PCC	CSE	-	x-x-x-3
Community Service -I (COS - I) *	CS	-	SDC	DCCC	(30)	0-0-1-1
Community Service -II (COS - II) *	CS	-	SDC	DCCC	(30)	0-0-1-1
Community Service -III (COS - III) *	CS	-	SDC	DCCC	(30)	0-0-1-1
Community Service -IV (COS - IV) *	CS	-	SDC	DCCC	(30)	0-0-1-1
<b>TOTAL</b>						<b>21</b>
<b>Audit Course</b>						
		-				
<b>Common Core (Non-Credit) - Graduate Requirement: Nil</b>						

† The credits of Internship - I taken up after the II Semester is reflected in the VIII Semester

†† The credits of Internship - II taken up after the IV Semester is reflected in the VIII Semester

††† The credits of Internship - III taken up after the VI Semester is reflected in the VIII Semester

\* The credit of Community Service - I (COS-I) / Community Service - II (COS-II) / Community Service - III (COS-III) / Community Service - IV(COS-IV) of 30 hours each that was carried out in the I / II / III and IV Semesters respectively is reflected in the VIII Semester.