CMR UNIVERSITY
Private University Estd in Karnataka State by Act No.45 of 2013
BENGALURU
RECOGNISED BY **UGC**

SCHOOL OF ENGINEERING & TECHNOLOGY (SOET)

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

B.Tech. IT

I Semester (Physics Cycle)

Course	CMRU Category	CMRU Subcategory	AICTE Category	School/ Department	Contact Hours/ Week	Credit Distribution L-T-P-C
Program Core						
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
Common Core						
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) *	CS	-	SDC	DCCC	(30)	0-0-1-1*
TOTAL					29	24 + 1*
Audit Course						
		-				
Common Core (Non-Credit) - Graduate Requirement: 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 (Physics Cycle)

Course	CMRU Category	CMRU Subcategory	AICTE Category	School/ Department	Contact Hours/ Week	Credit Distribution L-T-P-C
Program Core						
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
Common Core						
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*
TOTAL					**24**	**19 + 1***
Audit Course						
		-				
Common Core (Non-Credit) - Graduate Requirement: **GPSDR1081: Personal Effectiveness**						

† 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
Program Core						
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
Common Core						
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*
TOTAL					**26**	**19 + 1***
Audit Course						
		-				
Common Core (Non-Credit) - Graduate Requirement: **Nil**						

II Semester (Chemistry Cycle)

Course	CMRU Category	CMRU Subcategory	AICTE Category	School/ Department	Contact Hours/ Week	Credit Distribution L-T-P-C
Program Core						
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
Common Core						
Design Thinking-2	PS	-	HSMC	DCCC	(30)	0-0-2-2
Community Service - II (COS - I) *	CPC	-	SDC	DCCC	(30)	0-0-1-1*
Oral and Written Communication	PS	-	HSMC	DCCC	4	4-0-0-4
TOTAL					**27**	**24 + 1***
Audit Course						
		-				
Common Core (Non-Credit) - Graduate Requirement: **GPSDR1081: Personal Effectiveness**						

III Semester

Course	CMRU Category	CMRU Subcategory	AICTE Category	School/ Department	Contact Hours/ Week	Credit Distribution L-T-P-C
Program Core						
Discrete Mathematical Structures and Applications	Foundation	FC	PCC	BS	4	3-1-0-4
Data structures and Applications	Foundation	FC	PCC	IT	4	2-0-1-3
Problem solving and programming using C	Foundation	FC	PCC	BS	3	1-0-1-2
Web Development Using Python and Django (P) (MOOC)	Foundation	FC	PCC	IT	4	2-0-1-3
Computer Organization and Architecture	Foundation	FC	PCC	IT	3	3-0-0-3
	Foundation	Internship- I*	PROJ	IT		
Common Core						
Indian Constitution	KSC	-	MC	DCCC	2	2-0-0-2
Arts & Philosophy	KSC	-	MC	DCCC	1	1-0-0-1
Community Service -III (COS - III) *	CS	-	SDC	DCCC	(30)	0-0-1-1*
TOTAL					**22**	**18 + 1***
Audit Course						
		-				
Common Core (Non-Credit) - Graduate Requirement: GPSBD1171- GPSBA1081 - Career Preparedness Program-I (Career essentials + Prepare for Aptitude Tests-I)						

*† 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
Program Core						
Mathematics IV	Foundation	FC	BSC	BS	4	3-1-0-4
Design and Analysis of Algorithms	Foundation	IC	PCC	IT	5	3-0-1-4
Operating System	Foundation	FC	PCC	IT	3	3-0-0-3
Python for Data Science (P) (MOOC)	Foundation	IC	PCC	IT	4	2-0-1-3
Software Engineering	Foundation	IC	PCC	IT	2	2-0-0-2
Making with Electronics	PS	-	ESC	ECE	5	1-0-2-3
Common Core						
Critical Inquiry	PS	-	SDC	DCCC	1	1-0-0-1
Community Service –IV (COS - IV) *	CS	-	SDC	DCCC	(30)	0-0-1-1 *
TOTAL					**25**	**20 + 1***
Audit Course						
		-				
Common Core (Non-Credit) - Graduate Requirement: **GPSBD1191 - GPSBA1091 - Career Preparedness Program-II (Career Readiness + Prepare for Aptitude Tests-II)**						

† 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
Program Core						
Artificial Intelligence	Foundation	FC	PCC	IT	3	3-0-0-3
Computer Networks	Foundation	FC	PCC	IT	5	3-0-1-4
Database Management System (P)	Foundation	IC	PCC	IT	5	3-0-1-4
Open Elective 1	Elective	IC	OEC		3	x-x-x-3
Professional Elective 1	Elective	IC	PEC	IT	3	x-x-x-3
	Inter disciplinary Elective1	IDE	OEC		3	x-x-x-3
	Foundation	Internship-II* (5th - 6th Break)	PROJ	IT		
Common Core						
Environment and Sustainability	KSC	-	HSMC	Civil	2	2-0-0-2
TOTAL					24	22
Audit Course						
			-			
Common Core (Non-Credit) - Graduate Requirement: **GPSBA1101 - Prepare for Aptitude Tests - III** †						

† 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)
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
Program Core						
Software Testing	Foundation	AC	PCC	IT	3	3-0-0-3
Machine Learning (P)	Foundation	IC	PCC	IT	5	3-0-1-4
Open Elective 2	Elective	IC	OEC		3	x-x-x-3
Professional Elective 2	Elective	IC	PEC	IT	3	x-x-x-3
	Inter disciplinary Elective 2	IDE	OEC		3	x-x-x-3

Common Core							
Sociology of globalization and sustainable development	CS	-	HSMC	DCCC	2	2-0-0-2	
TOTAL					19	18	
Audit Course							
			-				
Common Core (Non-Credit) - Graduate Requirement: **GPSBA1111 - GPSBD1201 - Career Preparedness Program-III (Career Insights + Prepare for Aptitude Tests-IV)**							

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

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

PROFESSIONAL ELECTIVE–2: CYBER SECURITY	
4CSGC3131	System Security
4CSGC3141	Ethical Hacking (MOOC)
4CSGC3151	Malware analysis (MOOC)

PROFESSIONAL ELECTIVE–2: APPLICATION DEVELOPMENT	
4CSPL3111	Object Oriented Analysis Design
4CSPL3121	Web Technology Frameworks (MOOC)
4CSPL3131	Application Development using MERN Stack (MOOC)
4CSGC2071	Cloud Computing

PROFESSIONAL ELECTIVE–1: NETWORKING	
4CSPL3141	Advanced Computer Networks
4CSGC3161	Wireless Technologies (MOOC)
4CSGC3171	Multimedia Networking (MOOC)

OPEN ELECTIVE–2	
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
Program Core						
Network Security	Foundation	AC	PCC	IT	3	3-0-0-3
Mobile Application Development (P)	Foundation	AC	PCC	IT	4	2-0-1-3
Professional Elective 3	Elective	AC	PEC	IT	3	x-x-x-3
Professional Elective 4	Elective	AC	PEC	IT	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	IT		
	Foundation	Internship-III* (6th - 7th Break)	PROJ	IT		
Common Core						
Ethics & Values	CC	-	HSMC	DCCC	2	2-0-0-2
TOTAL					**19**	**18**
Audit Course						
			-			
Graduate Requirement						
Common Core (Non-Credit) - Graduate Requirement: GPSDL1061 - Career Advancement						

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

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

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

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

PROFESSIONAL ELECTIVE–3,4: NETWORKING	
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
Program Core						
Capstone Project Phase II	Foundation	Capstone	PCC	IT	-	x-x-x-8
Internship- I*	Foundation	Internship	PCC	IT	-	x-x-x-3
Internship- II*	Foundation	Internship	PCC	IT	-	x-x-x-3
Internship- III*	Foundation	Internship	PCC	IT	-	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
TOTAL						**21**
Audit Course						
			-			
Common Core (Non-Credit) - Graduate Requirement: Career Preparedness Courses [†] + Community Service [††]						

† 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.