School of Engineering and Technology



School of Engineering and Technology

Department of Computer Science and Engineering

B. Tech. Computer Science and Engineering

Curriculum Structure (R23)

Semester: I-VIII

Programme Structure for B Tech.: First Computer Science and Engineering

Semester I: Teaching Scheme

Course Code	Course Name	Teaching Scheme (Hrs/week)			Credits Assigned			
		Th	Pr	Tu	Th	Pr	Tu	Total credits
U01BS101	Applied Mathematics I	3	-	-	3	-	-	3
U01BS001 U01BS002	Applied Chemistry OR Applied Physics	3	-	-	3	-	-	3
U01ES001 U01ES002	Engineering Mechanics OR Engineering Graphics	2	-	-	2	-	-	2
U01ES003 U01ES004	Basic Civil and Mechanical Engineering OR Basic Electrical and Electronics Engineering	3	-	-	3	-	-	3
U01BS003 U01BS004	Applied Chemistry Lab OR Applied Physics Lab	-	2	-	-	1	-	1
U01ES005 U01ES006	Engineering Mechanics Lab OR Engineering Graphics Lab	-	4	-	-	2	-	2
U01ES007 U01ES008	Basic Civil and Mechanical Engineering Lab OR Basic Electrical and Electronics Engineering Lab	-	2	-	-	1	-	1
U03AE001 U01IK002	Professional Communication OR Ancient Indian Logic from the view point of Computer Science and Engineering	2*	-	-	2	-	-	2
U01VS001 U01VS002	Workshop Practice-I:C Programming OR Workshop Practice-II: Basic Engineering Practices	-	4	-	-	2	-	2
U04CC0XX	Co-curricular Courses I	-	4	-	-	2	-	2
U03VE001	Constitution of India	2	-	-	2	-	-	2
U03VE002	Universal Human Values-I#	-	-	-				**Audit Course**
	Total	**15**	**16**	**-**	**15**	**8**	**-**	**23**

- ***Out of 2 hours, 1 hour theory shall be taught to entire class followed by 1 hrs. Practical in batches,Th: Theory, Pr: Practical, Tu: Tutorial**
- **#During the Induction Program, students would get an initial exposure to human values through Universal Human Values-I.**

Semester I: Evaluation Scheme

Course Code	Course Name	Theory Marks					Practical Marks		Total
		Internal Assessment				ESE	Term work	Practical Oral/POE	
		T1	T2	FET	Total				
U01BS101	Applied Mathematics I	10	10	5	25	50	-	-	75
U01BS001 OR U01BS002	Applied Chemistry OR Applied Physics	10	10	5	25	50	-	-	75
U01ES001 OR U01ES002	Engineering Mechanics OR Engineering Graphics	-	10	5	15	35	-	-	50
U01ES003 OR U01ES004	Basic Civil and Mechanical Engineering OR Basic Electrical and Electronics Engineering	10	10	5	25	50	-	-	75
U01BS003 OR U01BS004	Applied Chemistry Lab OR Applied Physics Lab	-	-	-	-	-	25	-	25
U01ES005 OR U01ES006	Engineering Mechanics Lab OR Engineering Graphics Lab	-	-	-	-	-	50	-	50
U01ES007 OR U01ES008	Basic Civil and Mechanical Engineering Lab OR Basic Electrical and Electronics Engineering Lab	-	-	-	-	-	25	-	25
U03AE001 OR U01IK002	Professional Communication OR Ancient Indian Logic from the view point of Computer Science and Engineering	-	10	5	15	35	-	-	50
U01VS001 OR U01VS002	Workshop Practice-I:C Programming OR Workshop Practice-II: Basic Engineering Practices	-	-	-	-	-	50	-	50
U04CC0XX	Co-curricular courses I	-	-	-	-	-	50	-	50
U03VE001	Constitution of India	-	10	5	15	35	-	-	50
U03VE002	Universal Human Values-I	-	-	-	-	-	-	-	Audit Course

- **Minimum passing is 40% for all courses and evaluation head mentioned above. FET – Faculty evaluation for Theory, T1, T2, Continuous Assessment Test, Term Work , ESE - End Semester Examination, P/F – Pass/ Fail Course, AU – Audit Course**

Programme Structure for B Tech.: First Year Computer Science and Engineering
Semester II: Teaching Scheme

Course Code	Course Name	Teaching Scheme (Hrs/week)			Credits Assigned			
		Th	Pr	Tu	Th	Pr	Tu	Total Credits
U01BS201	Applied Mathematics II	3	-	-	3	-	-	3
U01BS001 U01BS002	Applied Chemistry OR Applied Physics	3	-	-	3	-	-	3
U01ES001 U01ES002	Engineering Mechanics OR Engineering Graphics	2	-	-	2	-	-	2
U01ES003 U01ES004	Basic Civil and Mechanical Engineering OR Basic Electrical and Electronics Engineering	3	-	-	3	-	-	3
U01BS003 U01BS004	Applied Chemistry Lab OR Applied Physics Lab	-	2	-	-	1	-	1
U01ES005 U01ES006	Engineering Mechanics Lab OR Engineering Graphics Lab	-	4	-	-	2	-	2
U01ES007 U01ES008	Basic Civil and Mechanical Engineering Lab OR Basic Electrical and Electronics Engineering Lab	-	2	-	-	1	-	1
U03AE001 U01IK002	Professional Communication OR Ancient Indian Logic from the view point of Computer Science and Engineering	2*	-	-	2	-	-	2
U01VS001 U01VS002	Workshop Practice-I:C Programming OR Workshop Practice-II: Basic Engineering Practices	-	4	-	-	2	-	2
U04CC0XX	Co-curricular courses II	-	4	-	-	2	-	2
	Total	**13**	**16**		**13**	**8**		**21**

- ***Out of 2 hours, 1 hour Theory shall be taught to entire class followed by 1 hrs. Practical in batches,**

Th: Theory, Pr: Practical, Tu: Tutorial

Semester II: Evaluation Scheme

Course Code	Course Name	Theory Marks					Practical Marks		Total
		Internal Assessment				ESE	Term work	Practical Oral/POE	
		T1	T2	FET	Total				
U01BS201	Applied Mathematics II	10	10	5	25	50	-	-	75
U01BS001 U01BS002	Applied Chemistry OR Applied Physics	10	10	5	25	50	-	-	75
U01ES001 U01ES002	Engineering Mechanics OR Engineering Graphics	-	10	5	15	35	-	-	50
U01ES003 U01ES004	Basic Civil and Mechanical Engineering OR Basic Electrical and Electronics Engineering	10	10	5	25	50	-	-	75
U01BS003 U01BS004	Applied Chemistry Lab OR Applied Physics Lab	-	-	-	-	-	25	-	25
U01ES005 U01ES006	Engineering Mechanics Lab OR Engineering Graphics Lab	-	-	-	-	-	50	-	50
U01ES007 U01ES008	Basic Civil and Mechanical Engineering Lab OR Basic Electrical and Electronics Engineering Lab	-	-	-	-	-	25	-	25
U03AE001 U01IK002	Professional Communication OR Ancient Indian Logic from the view point of Computer Science and Engineering	-	10	5	15	35	-	-	50
U01VS001 U01VS002	Workshop Practice-I:C Programming OR Workshop Practice-II: Basic Engineering Practices	-	-	-	-	-	50	-	50
U04CC0XX	Co-curricular courses II	-	-	-	-	-	50	-	50

- **Minimum passing is 40% for all courses and evaluation head mentioned above. FET – FET – Faculty evaluation for Theory, T1, T2, Continuous Assessment Test, Term Work, ESE - End Semester Examination, P/F – Pass/ Fail Course, AU – Audit Course**

Exit Option:

- Students will have the flexibility to enter a programme in odd semesters and exit a programme after the successful completion of even semesters as per their future career needs.
- Students exiting the First-Year program after securing minimum 40 credits will be awarded UG Certificate in the relevant Discipline /Subject provided they secure 8 credits in work-based vocational courses or internship / Apprenticeship offered during summer vacation in addition to 4 credits from skill-based courses earned during the first and second semester.

Programme structure for B. Tech. Computer Science and Engineering

Second Year Computer Science and Engineering Programs Semester III: Teaching Scheme

Course code	Course name	Teaching scheme (Hrs /week)			Credits assigned			Total credits
		Theory	Practical	Tutorial	Theory	Practical	Tutorial	
U14BS301	Statistics and Numerical Techniques	3	-	-	3	-	-	3
U14PC302	Computer Organization & Architecture	3	-	-	3	-	-	3
U14PC303	Object Oriented Programming using C++	3	-	-	3	-	-	3
U14	Multidisciplinary Minor I	2	-	-	2	-	-	2
U14OE01X	Open Elective I	2	-	-	2	-	-	2
U02EM001	Engineering Economics	2	-	-	2	-	-	2
U14PC304	Computer Organization & Architecture Lab	-	2	-	-	1	-	1
U14PC305	Object Oriented Programming using C++ Lab	-	4	-	-	2	-	2
U01VE003	Environmental Science	2	-	-	2	-	-	2
U14FP001	Field Project I		4	-	-	2	-	2
Total		**17**	**10**	**-**	**17**	**5**	**-**	**22**

***Open Elective is selected from the bucket of Open Elective List:**

Second Year Computer Science and Engineering Programs Semester III: Evaluation Scheme

Course code	Course name	*Theory Marks*					*Practical Marks*		Total
		Internal Assessment				SEE	Term work	Practical Oral/POE	
		T1	T2	FET	Total				
U14BS301	Statistics and Numerical Techniques	10	10	5	25	50	-	-	75
U14PC302	Computer Organization & Architecture	10	10	5	25	50	-	-	75
U14PC303	Object Oriented Programming using C++	10	10	5	25	50	-	-	75
U14MM0X	Multidisciplinary Minor I	-	10	5	15	35	-	-	50
U14OE01X	Open Elective I	-	10	5	15	35	-	-	50
U02EM001	Engineering Economics	-	10	5	15	35	-	-	50
U14PC304	Computer Organization & Architecture Lab	-	-	-	-	-	25	-	25
U14PC305	Object Oriented Programming using C++ Lab	-	-	-	-	-	25	25	50
U01VE003	Environmental Science	-	10	5	15	35	-	-	50
U14FP001	Field Project I	-	-	-	-	-	25	25	50

* Minimum passing is 40% for all courses and evaluation head mentioned above. FET – Faculty evaluation for Theory , T1, T2, Continuous Assessment Test, Term Work , SEE - Semester End Examination, P/F – Pass/ Fail Course, AU – Audit Course

Programme structure for B. Tech. Computer Science and Engineering
Second Year Computer Science and Engineering Programs Semester IV: Teaching Scheme

Course code	Course Name	Teaching scheme (Hrs/week)			Credits assigned			Total credits
		Theory	Practical	Tutorial	Theory	Practical	Tutorial	
U14PC401	Data Structure	3	-	-	3	-	-	3
U14PC402	Operating System	3	-	-	3	-	-	3
U14PC403	Database Management System	2	-	-	2	-	-	2
U14MM0XX	Multidisciplinary Minor II	2	-	-	2	-	-	2
U14OE02XX	Open Elective II	2	-	-	2	-	-	2
U02EM001	Engineering Management	2	-	-	2	-	-	2
U14VS401	Software Proficiency I (Java Programming)	-	4	-	-	2	-	2
U14PC404	Data Structure Lab	-	2	-	-	1	-	1
U14PC405	Database Management System Laboratory	-	2	-	-	1	-	1
U14AE403 U14AE404	Modern Indian Language – Hindi OR Modern Indian Language – Sanskrit	2	-	-	2	-	-	2
U03VE404	Universal Human Values II	2	-	-	2	-	-	2
Total		**18**	**8**		**18**	**4**		**22**

Second Year Computer Science and Engineering Programs Semester IV: Evaluation Scheme

Course code	Course Name	*Theory Marks*					*Practical Marks*		Total
		Internal Assessment				SEE	Term work	Practical Oral /POE	
		T1	T2	FET	Total				
U14PC401	Data Structure	10	10	5	25	50	-	-	75
U14PC402	Operating System	10	10	5	25	50	-	-	75
U14PC403	Database Management System	10	10	5	25	50	-	-	75
U14MM0XX	Multidisciplinary Minor II	-	10	5	15	35	-	-	50
U14OE02XX	Open Elective II	-	10	5	15	35	-	-	50
U02EM001	Engineering Management	-	10	5	15	35	-	-	50
U14VS401	Software Proficiency I (Java Programming)	-	-	-	-	-	25	25	50
U14PC404	Data Structure Lab	-	-	-	-	-	25	-	25
U14PC405	Database Management System Laboratory	-	-	-	-	-	25	-	25
U14AE003 U14AE004 U14AE005	Modern Indian Language – Hindi OR Modern Indian Language – Sanskrit OR Modern Indian Language – Marathi	-	10	5	15	35	-	-	50
U03VE004	Universal Human Values II	-	10	5	15	35	-	-	50

* Minimum passing is 40% for all courses and evaluation head mentioned above. FET – Faculty evaluation for Theory, T1, T2, Continuous Assessment Test, Term Work, SEE - Semester End Examination, P/F – Pass/ Fail Course, AU – Audit Course

Exit Option:

- Students will have the flexibility to enter a programme in odd semesters and exit a programme after the successful completion of even semesters as per their future career needs.
- Students exiting the Second Year Programme after securing minimum 80credits will be awarded UG Diploma in the relevant Discipline /Subject provided they secure additional 8 credits in skill-based vocational courses (skill-based courses, internship, mini projects etc) offered during summer vacation after the second year.

Programme structure for B. Tech. Computer Science and Engineering

Third Year Computer Science and Engineering Programs Semester V: Teaching Scheme

Course code	Course name	Teaching scheme (Hrs/week)			Credits assigned			
		Theory	Practical	Tutorial	Theory	Practical	Tutorial	Total Credits
U14PC501	Theory of Computation	3	-	-	3	-	-	3
U14PC502	Design and Analysis of Algorithm	3	-	-	3	-	-	3
U14PC503	Advanced Database Technologies	3	-	-	3	-	-	3
U14PE5XX	Program Elective I	2	2	-	2	1	-	3
U14MM0XX	Multidisciplinary Minor III	2	-	-	2	-	-	2
U14OE03X	Open Elective III	2	-	-	2	-	-	2
U14PC504	Design and Analysis of Algorithm Lab	-	2	-	-	1	-	1
U14PC505	Advanced Database Technologies Lab	-	4	-	-	2	-	2
U14PC506	Software Proficiency Program II (Python Programming)	-	4	-	-	2	-	2
	Total	**16**	**10**		**16**	**5**		**21**

Program Elective					
Vertical I (Artificial Intelligence)		**Vertical II (Information and Cyber Security)**		**Vertical III ((Networking)**	
Code	**Course Name**	**Code**	**Course Name**	**Code**	**Course Name**
U14PE511	Introduction to Artificial Intelligence	U14PE521	Cryptography and Network Security	U14PE531	Storage area network
U14PE611	Soft Computing	U14PE621	Cyber Security	U14P631	Advanced Network Technology
U14PE612	Optimization Techniques	U14PE622	Ethical Hacking	U14PE632	Wireless Sensor Network
U14PE711	Deep Learning	U14PE721	Digital Forensic	U14PE731	Mobile Computing
U14PE811	Natural Language Processing	U14PE821	Blockchain	U14PE831	5G Technology

Third Year Computer Science and Engineering Programs Semester V: Evaluation Scheme

Course code	Course name	*Theory Marks*					*Practical Marks*		Total
		Internal Assessment				SEE			
		T1	T2	FET	Total		Term work	Practical Oral/POE	
U14PC501	Theory of Computation	10	10	5	25	50	-	-	75
U14PC502	Design and Analysis of Algorithm	10	10	5	25	50	-	-	75
U14PC503	Advanced Database Technologies	10	10	5	25	50	-	-	75
U14PE5XX	Program Elective I	10	10	5	25	50	-	-	75
U14MM0XX	Multidisciplinary Minor III	-	10	5	25	35			50
U14OE03X	Open Elective III	10	10	5	25	25	-	-	50
U14PC504	Design and Analysis of Algorithm Lab	-	-	-	-	-	25	-	25
U14PC505	Advanced Database Technologies Lab	-	-	-	-		25	25	50
U14PC506	Software Proficiency Program II (Python Programming)	-	-	-	-	-	25	25	50

* Minimum passing is 40% for all courses and evaluation head mentioned above. FET – Faculty evaluation for Theory, T1, T2, Continuous Assessment Test, FEP, Faculty Evaluation for Practical, SEE - Semester End Examination, P/F – Pass/ Fail Course, AU – Audit Course

Programme structure for B. Tech. Computer Science and Engineering

Third Year Computer Science and Engineering Programs Semester VI: Teaching Scheme

Course code	Course name	Teaching scheme (Hrs/week)			Credits assigned			
		Theory	Practical	Tutorial	Theory	Practical	Tutorial	Total credits
U14PC601	Software Engineering	3	-	-	3	-	-	3
U14PC602	System Programming and Compiler Construction	3	-	1	4	-	-	4
U14PC603	Machine Learning	3	-	-	3	-	-	3
U14PE6XX	Program Elective II	3	-	-	3	-	-	3
U14PE6XX	Program Elective III	3	-	-	3	-	-	3
U14MM0X	Multidisciplinary Minor IV	2	-	-	2	-	-	2
U14VS601	Software Engineering	-	2	-	-	1	-	1
U14PC604	Software Proficiency Program III (Web Technology)	-	4	-	-	2	-	2
U14PC605	Machine Learning Lab	-	2	-	-	1	-	1
Total		**17**	**10**	**-**	**17**	**5**	**-**	**22**

Third Year Computer Science and Engineering Programs Semester VI: Evaluation Scheme

Course code	Course Name	*Theory Marks*					*Practical Marks*		Total
		Evaluation (Theory)				SEE	Evaluation (Lab)		
		T1	T2	FET	Total		Term work	Practical Oral/POE	
U14PC601	Software Engineering	10	10	5	25	50	-	-	75
U14PC602	System Programming and Compiler Construction	10	10	5	25	50	-	-	75
U14PC603	Machine Learning	10	10	5	25	50	-	-	75
U14PE6XX	Program Elective II	10	10	5	25	50	-	-	75
U14PE6XX	Program Elective III	10	10	5	25	50	-	-	75
U14MM0X	Multidisciplinary Minor IV	-	10	5	25	35			50
U14VS601	Software Engineering	-	-	-	-	-	25	25	50
U14PC604	Software Proficiency Program III (Web Technology)	-	-	-	-		25	25	50
U14PC605	Machine Learning Lab	-	-	-	-	-	25		25

* Minimum passing is 40% for all courses and evaluation head mentioned above. FET – Faculty evaluation for Theory, T1, T2, Continuous Assessment Test, FEP, Faculty Evaluation for Practical, SEE - Semester End Examination, P/F – Pass/ Fail Course, AU – Audit Course

Exit Option:

- Students will have the flexibility to enter a programme in odd semesters and exit a programme after the successful completion of even semesters as per their future career needs.
- Students exiting the 3-year UG program will be awarded B.Voc. in the relevant Discipline /Subject upon securing minimum 120 credits with additional 8 credits in skill-based vocational courses (skill-based courses, internship, mini projects etc.) offered during summer vacation after the sixth semester.

Programme structure for B. Tech. Computer Science and Engineering

Final Year Computer science and Engineering Programs Semester VII: Teaching Scheme

Course code	Course name	Teaching scheme (Hrs/week)			Credits assigned			
		Th	Pr	Tu	Th	Pr	Tu	Total credits
U14PC701	Mobile Application Development	3	-	-	3	-	-	3
U14PC702	Agile Software Development	3	-	-	3	-	-	3
U14PE7XX	Program Elective IV	3	-	-	3	-	-	3
U01RM701	Research Methodology	3	-	-	3	-	-	3
UXXMM0XX	Multidisciplinary Minor V	2	-	-	2	-	-	2
U14PC703	Mobile Application Development Lab	-	4	-	-	2	-	2
U14PC704	Agile Software Development Lab	-	2	-	-	1	-	1
U14PC705	Cloud Computing Lab	-	4	-	-	2		2
U14PE7XX	Program Elective IV Lab	-	2	-	-	1	-	1
U14PR701 **OR** U14EP701 **OR** U14RE701	Project Phase I (Industry Internship With Capstone Project) **OR** Entrepreneurship Project Phase I (Entrepreneurship Venture Track) **OR** Research Project Phase I (Higher Opportunity Track)	-	4	-	-	2	-	2
Total		**14**	**12**		**14**	**6**		**20**

Th: Theory, Pr: practical, Tu: Tutorial

Program Elective IV					
Vertical I (Artificial Intelligence)		**Vertical II (Information and Cyber Security)**		**Vertical III (Networking)**	
Code	**Course Name**	**Code**	**Course Name**	**Code**	**Course Name**
U14PE711	Deep Learning	U14PE721	Digital Forensic	U14PE731	Mobile Computing

Final Year Computer Science and Engineering Programs Semester VII: Evaluation Scheme

Course code	Course name	*Theory Marks*					Practical Marks		Total
		Evaluation (Theory)				SEE	Term work	Practical Oral/POE	
		T1	T2	FET	Total				
U14PC701	Mobile Application Development	10	10	5	25	50	-	-	75
U14PC702	Agile Software Development	10	10	5	25	50	-	-	75
U14PE7XX	Program Elective IV	10	10	5	25	50	-	-	75
U01RM701	Research Methodology	10	10	5	25	50	-	-	75
UXXMM0XX	Multidisciplinary Minor IV	-	10	5	15	35	-	-	50
U14PC703	Mobile Application Development Lab	-	-	-	-	-	25	25	50
U14PC704	Agile Software Development Lab	-	-	-	-		25	-	25
U14PC705	Cloud Computing Lab	-	-	-	-	-	25	25	50
U14PE7XX	Program Elective IV Lab	-	-	-	-	-	25	-	25
U14PR701 **OR** U14EP701 **OR** U14RE701	Project Phase I (Industry Internship with Capstone Project) **OR** Entrepreneurship Project Phase I (Entrepreneurship Venture Track) **OR** Research Project Phase I (Higher Opportunity Track)	-	-	-	-	-	50	-	50
								Total	**550**

* Minimumpassingis40%forallcoursesandevaluationheadmentionedabove.FET–FacultyevaluationforTheory, T1, T2, Continuous Assessment Test, FEP, Faculty Evaluation for Practical, ESE -End Semester Examination, P/F – Pass/ Fail Course, AU – Audit Course

Note: The Evaluation of Project Phase I is divided into two parts (Internal Assessment)

a) Preparation and presentation of the proposal of the Project (Motivation/ Relevance, Problem Statement, Literature Survey, Objectives, Methodology and design of the project) for 25marks.

b) Student shall present a seminar on the topic relevant to the Project work for 25 marks.

R23 Programme structure for B. Tech. Computer Science and Engineering
Final Year Computer Science and Engineering Programs Semester VIII: Teaching Scheme

Track I: Industry Internship with Capstone Project Track

Course code	Course name	Teaching scheme			Credits assigned			
		Th	Pr	Tu	Th	Pr	Tu	Total credits
U14PE8XX	Program Elective V	3	-	-	3	-	-	3
UXXMM0XX	Multidisciplinary Minor VI	2	-	-	2	-	-	2
U14PR801	Project Phase II	-	8	-	-	4	-	4
U14OT801	Internship/On job Training	-	24	-	-	12	-	12
	Total	**5**	**32**	**-**	**5**	**16**	**-**	**21**

Th: Theory, Pr: practical, Tu: Tutorial

Semester VIII: Evaluation Scheme
Track I: Industry Internship with Capstone Project Track

Course code	Course name	*Theory Marks*					Practical Marks		Total
		Evaluation (Theory)				SEE	Evaluation (Lab)		
		T1	T2	FET	Total		Term work	Practical Oral/POE	
U14PE8XX	Program Elective V	10	10	5	25	50	-	-	75
UXXMM0XX	Multidisciplinary Minor VI	-	10	5	15	35	-	-	50
U14PR801	Project Phase II	-	-	-	-	-	50	50	100
U14OT801	Internship/On job Training	-	-	-	-	-	200	100	300
								Total	**525**

Minimum passing is 40% for all courses and evaluation head mentioned above. FET – Faculty evaluation for Theory, T1, T2, Continuous Assessment Test, FEP, Faculty Evaluation for Practical, SEE -Semester End Examination, P/F – Pass/ Fail Course, AU – Audit Course.

- Additional Credits for Bachelor's Degree- with Double Minor 12 Credits.
  These are additional credits to be offered from the second year to the final year and will be offered as an option to students.
- Additional Credits for Bachelor's Degree- with Honors: 16-20 Credits.
  These are additional credits from same domain to be offered from the second year to the final year and will be offered as an option to students.
- Additional Credits for Bachelor's Degree- Honors with Research: Minimum 16-20 Credits.
  These are additional credits to be offered in the final year and will be offered as an option to students.

Program Elective V					
Vertical I (Artificial Intelligence)		**Vertical II (Information and Cyber Security)**		**Vertical III (Networking)**	
Code	**Course Name**	**Code**	**Course Name**	**Code**	**Course Name**
U14PE811	Natural Language Processing (Online MOOC)	U14PE821	Blockchain (Online MOOC)	U14PE831	5G Technology (Online MOOC)

Note: The Program Elective V and Multidisciplinary Minor VI shall be conducted in online mode, by faculty of SGU or other institute/ University. Students can also opt a course from MOOCs platforms such as SWAYAM, NPTEL, Coursera etc. In case there is no assessment and examination conducted by the MOOCs platforms then the assessment and examination will be conducted by SGU.

R23 Programme structure for B. Tech. Computer Science and Engineering
Final Year Computer Science and Engineering Programs Semester VIII:
Teaching Scheme

Track II: Entrepreneurship Venture Track

Course code	Course name	Teaching scheme (Hrs/week)			Credits assigned			
		Th	Pr	Tu	Th	Pr	Tu	Total
U14PE8XX	Program Elective V	3	-	-	3	-	-	3
UXXMM0XX	Multidisciplinary Minor VI	2	-	-	2	-	-	2
U14EP801	Online Course in Advanced Technology (domain area)	-	-	-	4	-	-	4
U14EP802	Entrepreneurship project Phase II	-	24	-	-	12	-	12
	Total	**5**	**24**	**-**	**9**	**12**	**-**	**21**

Th: Theory, Pr: practical, Tu: Tutorial

Semester VIII: Evaluation Scheme

Track II: Entrepreneurship Venture Track

Course code	Course name	*Theory Marks*					Practical Marks		Total
		Evaluation (Theory)				SEE	Evaluation (Lab)		
		T1	T2	FET	Total		Term work	Practical Oral/POE	
U14PE8XX	Program Elective V	10	10	5	25	50	-	-	75
UXXMM0XX	Multidisciplinary Minor VI	-	10	5	15	35	-	-	50
U14EP801	Online Course in Advanced Technology (domain area)	-	-	-	25	75	-	-	100
U14EP802	Entrepreneurship project Phase II	-	-	-	-	-	200	100	300
								Total	**525**

Minimum passing is 40% for all courses and evaluation head mentioned above. FET – Faculty evaluation for Theory, T1, T2, Continuous Assessment Test, FEP, Faculty Evaluation for Practical, SEE -Semester End Examination, P/F – Pass/ Fail Course, AU – Audit Course.

- Additional Credits for Bachelor's Degree- with Double Minor 12 Credits.

These are additional credits to be offered from the second year to the final year and will be offered as an option to students.

- Additional Credits for Bachelor's Degree- with Honors: 16-20 Credits.

These are additional credits from same domain to be offered from the second year to the final year and will be offered as an option to students.

Additional Credits for Bachelor's Degree- Honors with Research: Minimum 16-20 Credits. These are additional credits to be offered in the final year and will be offered as an option to students.

R23 Programme structure for B. Tech. Computer Science and Engineering
Final Year Computer Science and Engineering Programs Semester VIII:
Teaching Scheme

Track III: Higher Opportunity Track

Course code	Course name	Teaching scheme (Hrs/week)			Credits assigned			
		Th	Pr	Tu	Th	Pr	Tu	Total
U14PE8XX	Program Elective V	3	-	-	3	-	-	3
UXXMM0XX	Multidisciplinary Minor VI	2	-	-	2	-	-	2
U14RE801	Online Course in Advanced Technology (domain area)	-	-	-	4	-	-	4
U14RE802	Research Project Phase II	-	24	-	-	12	-	12
	Total	**5**	**24**	**-**	**9**	**12**	**-**	**21**

Th: Theory, Pr: practical, Tu: Tutorial

Semester VIII: Evaluation Scheme

Track III: Higher Opportunity Track

Course code	Course name	*Theory Marks*					Practical Marks		Total
		Evaluation (Theory)				SEE	Evaluation (Lab)		
		T1	T2	FET	Total		Term work	Practical Oral/POE	
U14PE8XX	Program Elective V	10	10	5	25	50	-	-	75
UXXMM0XX	Multidisciplinary Minor VI	-	10	5	15	35	-	-	50
U14RE801	Online Course in Advanced Technology (domain area)	-	-	-	25	75	-	-	100
U14RE802	Research Project Phase II	-	-	-	-	-	200	100	300
								Total	**525**

Minimum passing is 40% for all courses and evaluation head mentioned above. FET – Faculty evaluation for Theory, T1, T2, Continuous Assessment Test, FEP, Faculty Evaluation for Practical, SEE -Semester End Examination, P/F – Pass/ Fail Course, AU – Audit Course.

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