



GLOBAL ACADEMY OF TECHNOLOGY

(Autonomous Institution Affiliated to VTU, Belagavi)

Accredited by NAAC with 'A' Grade,

NBA Accredited - CSE, ISE, ECE, EEE, ME, CV

Ideal Homes Township, Raja Rajeshwari Nagar, Bengaluru-560098



Scheme and Syllabus of III to VIII Semester

(Autonomous System of 2023 Scheme)

Bachelor of Engineering (B.E)

in

COMPUTER SCIENCE AND ENGINEERING

S. S. Swamy

Head of Department
Computer Science Engineering
Global Academy of Technology
Bangalore 98

H. M. Rajeshwari Swam

Dean Academic
Global Academy of Technology,
Rajarajeshwarinagar, Bengaluru-560098

Vision

To achieve academic excellence and strengthen the skills to meet emerging challenges of computer science and engineering.

Mission

- M1: To impart strong theoretical foundation in the field of Computer Science and Engineering accompanied with extensive practical skills.
- M2: To inculcate research and innovation spirit through interaction with industry and carry out projects that address societal needs.
- M3: Instill professional ethics and values with a concern for environment.

S. S. Sharma



Global Academy of Technology

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B.E. in Computer Science and Engineering -Scheme of Teaching and Examinations 2023

Outcome Based Education (OBE) and Choice Based Credit System (CBCS)

(Effective from the academic year 2024-25)



III SEMESTER

Sl. No	Course and Course Code		Course Title	Teaching Department (TD) and Question Paper Setting Board (PSB)	Teaching Hours /Week				Examination				Credits	
					Theory Lecture	Tutorial	Practical/ Drawing	Self -Study	Duration in hours	CIE Marks	SEE Marks	Total Marks		
														L
1	BS	MAT23301A	Discrete Mathematics and Graph Theory	TD: MAT, PSB: MAT	2	2	0		03	50	50	100	3	
2	PCC	CSE23302	Data Structures	TD: CSE, PSB: CSE	3	0	0		03	50	50	100	3	
3	IPCC	CSE23303	Digital Logic Design and Computer Organization	TD: CSE, PSB: CSE	3	0	2		03	50	50	100	4	
4	PCC	CSE23304	Operating Systems	TD: CSE, PSB: CSE	3	0	0		03	50	50	100	3	
5	ESC/ ETC/ PLC	CSE23305x	ESC/ETC/PLC	TD: CSE, PSB: CSE	If the course is theory				03	50	50	100	3	
					3	0	0							
					If the course is lab									
					2	0	2							
6	MC	SCK23306	Social Connect and Responsibility	Any Department	0	0	2		03	100	-	100	1	
7	AEC	CSE23307x	Ability Enhancement Course/Skill Development Course - I	TD: CSE, PSB: CSE	1	0	2		03	50	50	100	2	
8	MC	NSK23308	National Service Scheme (NSS)	NSS coordinator	0	0	2		02	100	-	100	0	
		PEK23308	Physical Education (PE) (Sports and Athletics)	Physical Education Director										
		YOK23308	Yoga	Yoga Teacher										
9	PCCL	CSEL23309	Data Structures Lab	TD: CSE, PSB: CSE	0	0	2		03	50	50	100	1	
Total											550	350	900	20

Skarmy

H. N. Rajarajeshwarinagar
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Rajarajeshwarinagar, Bengaluru-98

Engineering Science Course (ESC/ETC/PLC)			
CSE23305A	Object Oriented Programming with C++	CSE23305C	Julia
CSE23305B	Programming with Python	CSE23305D	Ethics and Public Policy for AI
Ability Enhancement Course – I			
CSE23307A	Data Analytics with Excel	CSE23307C	Introduction to Web Technologies
CSE23307B	Project Management with Git	CSE23307D	Scala
PCC: Professional Core Course, PCCL: Professional Core Course laboratory, UHV: Universal Human Value Course, MC: Mandatory Course (Non-credit), AEC: Ability Enhancement Course, SEC: Skill Enhancement Course, L: Lecture, T: Tutorial, P: Practical S= SDA: Skill Development Activity, CIE: Continuous Internal Evaluation, SEE: Semester End Evaluation. K : The letter in the course code indicates common to all the stream of engineering. PROJ: Project /Mini Project. PEC: Professional Elective Course.			
Professional Core Course (IPCC): Refers to Professional Core Course Theory Integrated with practical of the same course. Credit for IPCC can be 04 and its Teaching– Learning hours (L : T : P) can be considered as (3 : 0 : 2) or (2 : 2 : 2). The theory part of the IPCC shall be evaluated both by CIE and SEE. The practical part shall be evaluated by only CIE (no SEE). However, questions from the practical part of IPCC shall be included in the SEE question paper. For more details, the regulation governing the Degree of Bachelor of Engineering /Technology (B.E./B.Tech.) 2022-23			
National Service Scheme /Physical Education/Yoga: All students have to register for any one of the courses namely National Service Scheme (NSS), Physical Education (PE)(Sports and Athletics), and Yoga(YOG) with the concerned coordinator of the course during the first week of III semesters. Activities shall be carried out between III semester to the VI semester (for 4 semesters). Successful completion of the registered course and requisite CIE score is mandatory for the award of the degree. The events shall be appropriately scheduled by the colleges and the same shall be reflected in the calendar prepared for the NSS, PE, and Yoga activities. These courses shall not be considered for vertical progression as well as for the calculation of SGPA and CGPA, but completion of the course is mandatory for the award of degree.			

Shel Harry



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IV SEMESTER

Sl. No	Course and Course Code		Course Title	Teaching Department (TD) and Question Paper Setting Board (PSB)	Teaching Hours /Week				Examination				Credits	
					Theory Lecture	Tutorial	Practical/ Drawing	Self-Study	Duration in hours	CIE Marks	SEE Marks	Total Marks		
					L	T	P	S						
1	BS	MAT23401A	Probability and Linear Algebra	TD: MAT, PSB: MAT	2	2	0		03	50	50	100	3	
2	PCC	CSE23402	Design and Analysis of Algorithms	TD: CSE, PSB: CSE	3	0	0		03	50	50	100	3	
3	IPCC	CSE23403	Object Oriented Programming with Java	TD: CSE, PSB: CSE	3	0	2		03	50	50	100	4	
4	PCC	CSE23404	Theory of Computation	TD: CSE, PSB: CSE	3	0	0		03	50	50	100	3	
5	ESC/ ETC/ PLC	CSE23405x	ESC/ETC/PLC	TD: CSE, PSB: CSE	If the course is theory				03	50	50	100	3	
					3	0	0							
					If the course is lab									
					2	0	2							
6	UHV	UHK23406	Universal Human Values	Any Department	1	0	0		03	50	50	100	1	
7	AEC	CSE23407x	Ability Enhancement Course/Skill Development Course - II	TD: CSE, PSB: CSE	1	0	2		03	50	50	100	2	
8	MC	NSK23408	National Service Scheme (NSS)	NSS coordinator	0	0	2		02	100	-	100	0	
		PEK23408	Physical Education (PE) (Sports and Athletics)	Physical Education Director										
		YOK23408	Yoga	Yoga Teacher										
9	PCCL	CSEL23409	Algorithms Laboratory	TD: CSE, PSB: CSE	0	0	2		03	50	50	100	1	
Total											500	400	900	20

Sleswamy

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Engineering Science Course (ESC/ETC/PLC)			
CSE23405A	Unix Programming	CSE23405C	R Programming
CSE23405B	Game Theory	CSE23405D	Optimization Technique
Ability Enhancement Course – II			
CSE23407A	UX/UI	CSE23407C	LEX-A Tool for Lexical Analysis
CSE23407B	Full Stack Framework (Front End)	CSE23407D	Technical Writing using LATEX
PCC: Professional Core Course, PCCL: Professional Core Course laboratory, UHV: Universal Human Value Course, MC: Mandatory Course (Non-credit), AEC: Ability Enhancement Course, SEC: Skill Enhancement Course, L: Lecture, T: Tutorial, P: Practical S= SDA: Skill Development Activity, CIE: Continuous Internal Evaluation, SEE: Semester End Evaluation. K : The letter in the course code indicates common to all the stream of engineering. PROJ: Project /Mini Project. PEC: Professional Elective Course. Professional Core Course (IPCC): Refers to Professional Core Course Theory Integrated with practical of the same course. Credit for IPCC can be 04 and its Teaching– Learning hours (L : T : P) can be considered as (3 : 0 : 2) or (2 : 2 : 2). The theory part of the IPCC shall be evaluated both by CIE and SEE. The practical part shall be evaluated by only CIE (no SEE). However, questions from the practical part of IPCC shall be included in the SEE question paper. For more details, the regulation governing the Degree of Bachelor of Engineering /Technology (B.E./B.Tech.) 2022-23 National Service Scheme /Physical Education/Yoga: All students have to register for any one of the courses namely National Service Scheme (NSS), Physical Education (PE)(Sports and Athletics), and Yoga(YOG) with the concerned coordinator of the course during the first week of III semesters. Activities shall be carried out between III semester to the VI semester (for 4 semesters). Successful completion of the registered course and requisite CIE score is mandatory for the award of the degree. The events shall be appropriately scheduled by the colleges and the same shall be reflected in the calendar prepared for the NSS, PE, and Yoga activities. These courses shall not be considered for vertical progression as well as for the calculation of SGPA and CGPA, but completion of the course is mandatory for the award of degree.			

Sk. Swamy



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V SEMESTER

Sl. No	Course and Course Code		Course Title	Teaching Department (TD) and Question Paper Setting Board (PSB)	Teaching Hours /Week				Examination				Credits
					Theory Lecture	Tutorial	Practical/ Drawing	Self -Study	Duration in hours	CIE Marks	SEE Marks	Total Marks	
1	HSMS	CSE23501	Software Engineering and Project Management	TD: CSE, PSB: CSE	3	0	0		03	50	50	100	3
2	IPCC	CSE23502	Database Management Systems	TD: CSE, PSB: CSE	2	2	2		03	50	50	100	4
3	PCC	CSE23503	Computer Networks	TD: CSE, PSB: CSE	3	2	0		03	50	50	100	4
4	PCCL	CSE23504	Full Stack Framework (Back End)	TD: CSE, PSB: CSE	0	0	2		03	50	50	100	1
5	PEC	CSE23505x	Professional Elective - I	TD: CSE, PSB: CSE	3	0	0		03	50	50	100	3
6	PROJ	CSEP23506	Mini Project	TD: CSE, PSB: CSE	0	0	4		03	100	-	100	2
7	AEC	RMIK23507	Research Methodology and IPR	Any Department	2	2	0		03	50	50	100	3
8	MC	CIVK23508	Environmental Studies	TD: CV, PSB:CV	2	0	0		02	50	50	100	2
9	MC	NSK23509	National Service Scheme (NSS)	NSS coordinator	0	0	2			100	-	100	0
		PEK23509	Physical Education (PE) (Sports and Athletics)	Physical Education Director									
		YOK23509	Yoga	Yoga Teacher									
Total										550	350	900	22

H. P. Rajashekar Swam

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S. S. S. S. S.

Professional Elective Course - I			
CSE23505A	Computer Graphics	CSE23505C	Data Visualization
CSE23505B	Robotic Process Automation	CSE23505D	Distributed Systems
PCC: Professional Core Course, PCCL: Professional Core Course laboratory, UHV: Universal Human Value Course, MC: Mandatory Course (Non-credit), AEC: Ability Enhancement Course, SEC: Skill Enhancement Course, L: Lecture, T: Tutorial, P: Practical S= SDA: Skill Development Activity, CIE: Continuous Internal Evaluation, SEE: Semester End Evaluation. K : The letter in the course code indicates common to all the stream of engineering. PROJ: Project /Mini Project. PEC: Professional Elective Course.			
Professional Core Course (IPCC): Refers to Professional Core Course Theory Integrated with practical of the same course. Credit for IPCC can be 04 and its Teaching– Learning hours (L : T : P) can be considered as (3 : 0 : 2) or (2 : 2 : 2). The theory part of the IPCC shall be evaluated both by CIE and SEE. The practical part shall be evaluated by only CIE (no SEE). However, questions from the practical part of IPCC shall be included in the SEE question paper. For more details, the regulation governing the Degree of Bachelor of Engineering /Technology (B.E./B.Tech.) 2022-23			
National Service Scheme /Physical Education/Yoga: All students have to register for any one of the courses namely National Service Scheme (NSS), Physical Education (PE)(Sports and Athletics), and Yoga(YOG) with the concerned coordinator of the course during the first week of III semesters. Activities shall be carried out between III semester to the VI semester (for 4 semesters). Successful completion of the registered course and requisite CIE score is mandatory for the award of the degree. The events shall be appropriately scheduled by the colleges and the same shall be reflected in the calendar prepared for the NSS, PE, and Yoga activities. These courses shall not be considered for vertical progression as well as for the calculation of SGPA and CGPA, but completion of the course is mandatory for the award of degree.			
Mini-project work: Mini Project is a laboratory-oriented/hands on course that will provide a platform to students to enhance their practical knowledge and skills by the development of small systems/applications etc. Based on the ability/abilities of the student/s and recommendations of the mentor, a single discipline or a multidisciplinary Mini- project can be assigned to an individual student or to a group having not more than 4 students.			
CIE procedure for Mini-project:			
(i) Single discipline: The CIE marks shall be awarded by a committee consisting of the Head of the concerned Department and two faculty members of the Department, one of them being the Guide. The CIE marks awarded for the Mini-project work shall be based on the evaluation of the project report, project presentation skill, and question and answer session in the ratio of 50:25:25. The marks awarded for the project report shall be the same for all the batches mates.			
(ii) Interdisciplinary: Continuous Internal Evaluation shall be group-wise at the college level with the participation of all the guides of the project. The CIE marks awarded for the Mini-project, shall be based on the evaluation of the project report, project presentation skill, and question and answer session in the ratio 50:25:25. The marks awarded for the project report shall be the same for all the batch mates.			
No SEE component for Mini-Project.			
Professional Elective Courses (PEC): A professional elective (PEC) course is intended to enhance the depth and breadth of educational experience in the Engineering and Technology curriculum. Multidisciplinary courses that are added supplement the latest trend and advanced technology in the selected stream of engineering. Each group will provide an option to select one course. The minimum number of students' strengths for offering a professional elective is 10. However, this conditional shall not be applicable to cases where the admission to the program is less than 10.			

Sk Sharma



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VI SEMESTER

VI SEMESTER													
Sl. No	Course and Course Code		Course Title	Teaching Department (TD) and Question Paper Setting Board (PSB)	Teaching Hours /Week				Examination				Credits
					Theory Lecture	Tutorial	Practical/ Drawing	Self -Study	Duration in hours	CIE Marks	SEE Marks	Total Marks	
1	IPCC	CSE23601	Cloud Computing	TD: CSE PSB: CSE	2	2	2		03	50	50	100	4
2	PCC	CSE23602	Machine Learning	TD: CSE PSB: CSE	3	2	0		03	50	50	100	4
3	PEC	CSE23603x	Professional Elective - II	TD: CSE PSB: CSE	3	0	0		03	50	50	100	3
4	OEC	CSE23604x	Open Elective - I	TD: CSE PSB: CSE	3	0	0		03	50	50	100	3
5	PROJ	CSEP23605	Major Project Phase - I	TD: CSE PSB: CSE	0	0	4		03	100	--	100	2
6	PCCL	CSEL23606	Machine Learning Lab	TD: CSE PSB: CSE	0	0	2		03	50	50	100	1
7	AEC/ SDC	CSE23607x	Ability Enhancement Course/ Skill Development Course - III	TD & PSB: Concerned Department	If the course is offered as a Theory				01	50	50	100	1
					1	0	0						
					If course is offered as a practical								
					0	0	2						
8	MC	NSK23608	National Service Scheme (NSS)	NSS coordinator	0	0	2		100	---	100	0	
		PEK23608	Physical Education (PE) (Sports and Athletics)	Physical Education Director									
		YOK23608	Yoga	Yoga Teacher									
9	IKS	IKSK23609	Indian Knowledge System		1	0	0		01	100	0	100	0
									Total	600	300	900	18

Sk...

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Professional Elective Course			
CSE23603A	Blockchain Technology	CSE23603C	Computer Vision
CSE23603B	Compiler Design	CSE23603D	Advanced Java
Open Elective Course			
CSE23604A	Introduction to Data Structures	CSE23604C	Mobile Application Development
CSE23604B	Fundamentals of Operating Systems	CSE23604D	Introduction to AI
Ability Enhancement Course / Skill Enhancement Course - III			
CSE23607A	Android App Development	CSE23607C	Selenium Testing
CSE23607B	MongoDB	CSE23607D	DevOps
PCC: Professional Core Course, PCCL: Professional Core Course laboratory, UHV: Universal Human Value Course, MC: Mandatory Course (Non-credit), AEC: Ability Enhancement Course, SEC: Skill Enhancement Course, L: Lecture, T: Tutorial, P: Practical S= SDA: Skill Development Activity, CIE: Continuous Internal Evaluation, SEE: Semester End Evaluation. K : The letter in the course code indicates common to all the stream of engineering. PROJ: Project /Mini Project. PEC: Professional Elective Course. PROJ: Project Phase -I, OEC: Open Elective Course			
Professional Core Course (IPCC): Refers to Professional Core Course Theory Integrated with practical of the same course. Credit for IPCC can be 04 and its Teaching-Learning hours (L : T : P) can be considered as (3 : 0 : 2) or (2 : 2 : 2). The theory part of the IPCC shall be evaluated both by CIE and SEE. The practical part shall be evaluated by only CIE (no SEE). However, questions from the practical part of IPCC shall be included in the SEE question paper. For more details, the regulation governing the Degree of Bachelor of Engineering /Technology (B.E./B.Tech.) 2022-23			
National Service Scheme /Physical Education/Yoga: All students have to register for any one of the courses namely National Service Scheme (NSS), Physical Education (PE)(Sports and Athletics), and Yoga(YOG) with the concerned coordinator of the course during the first week of III semesters. Activities shall be carried out between III semester to the VI semester (for 4 semesters). Successful completion of the registered course and requisite CIE score is mandatory for the award of the degree. The events shall be appropriately scheduled by the colleges and the same shall be reflected in the calendar prepared for the NSS, PE, and Yoga activities. These courses shall not be considered for vertical progression as well as for the calculation of SGPA and CGPA, but completion of the course is mandatory for the award of degree.			
Professional Elective Courses (PEC): A professional elective (PEC) course is intended to enhance the depth and breadth of educational experience in the Engineering and Technology curriculum. Multidisciplinary courses that are added supplement the latest trend and advanced technology in the selected stream of engineering. Each group will provide an option to select one course. The minimum number of students' strengths for offering professional electives is 10. However, this conditional shall not be applicable to cases where the admission to the program is less than 10.			
Open Elective Courses: Students belonging to a particular stream of Engineering and Technology are not entitled to the open electives offered by their parent Department. However, they can opt for an elective offered by other Departments, provided they satisfy the prerequisite condition if any. Registration to open electives shall be documented under the guidance of the Program Coordinator/ Advisor/Mentor. The minimum numbers of students' strength for offering Open Elective Course is 10. However, this condition shall not be applicable to class where the admission to the program is less than 10.			
Project Phase-I : Students have to discuss with the mentor /guide and with their help he/she has to complete the literature survey and prepare the report and finally define the problem statement for the project work.			

Seetharamy



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Scheme A- VII SEMESTER (Swappable VII and VIII SEMESTER)

Scheme A- VII SEMESTER (Swappable VII and VIII SEMESTER)													
Sl. No	Course and Course Code		Course Title	Teaching Department (TD) and Question Paper Setting Board (PSB)	Teaching Hours /Week				Examination				Credits
					Theory Lecture	Tutorial	Practical/ Drawing	Self-Study	Duration in hours	CIE Marks	SEE Marks	Total Marks	
					L	T	P	S					
1	IPCC	CSE23701	Deep Learning	TD: CSE PSB: CSE	3	0	2		03	50	50	100	4
2	IPCC	CSE23702	Cryptography & Network Security	TD: CSE PSB: CSE	3	0	2		03	50	50	100	4
3	PCC	CSE23703	Internet of Things	TD: CSE PSB: CSE	3	2	0		03	50	50	100	4
4	PEC	CSE23704x	Professional Elective-III	TD: CSE PSB: CSE	3	0	0		03	50	50	100	3
5	OEC	CSE23705x	Open Elective- II	TD: PSB:	3	0	0		01	50	50	100	3
6	PROJ	CSEP23706	Major Project Phase-II	---	0	0	12		03	100	100	200	6
Total										400	300	700	24

Professional Elective Course

CSE23704A	Data Warehousing Techniques	CSE23704C	Augmented Reality and Virtual Reality
CSE23704B	Natural Language Processing	CSE23704D	Big Data Analytics

Open Elective Course

CSE23705A	Introduction to DBMS	CSE23705C	Software Engineering
CSE23705B	Introduction to Algorithms	CSE23705D	Introduction to Networks

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PCC: Professional Core Course, **PCCL:** Professional Core Course laboratory, **PEC:** Professional Elective Course, **OEC:** Open Elective Course **PR:** Project Work, **L:** Lecture, **T:** Tutorial, **P:** Practical **S= SDA:** Skill Development Activity, **CIE:** Continuous Internal Evaluation, **SEE:** Semester End Evaluation. **TD-** Teaching Department, **PSB:** Paper Setting department, **OEC:** Open Elective Course, **PEC:** Professional Elective Course. **PROJ:** Project work

Note: VII and VIII semesters of IV years of the program

(1) Institutions can swap the VII and VIII Semester Schemes of Teaching and Examinations to accommodate research internships/ industry internships after the VI semester.

(2) Credits earned for the courses of VII and VIII Semester Scheme of Teaching and Examinations shall be counted against the corresponding semesters whether the VII or VIII semesters is completed during the beginning of the IV year or the later part of IV years of the program.

Professional Elective Courses (PEC): A professional elective (PEC) course is intended to enhance the depth and breadth of educational experience in the Engineering and Technology curriculum. Multidisciplinary courses that are added supplement the latest trend and advanced technology in the selected stream of engineering. Each group will provide an option to select one course. The minimum number of students' strengths for offering professional electives is 10. However, this conditional shall not be applicable to cases where the admission to the program is less than 10.

Open Elective Courses:

Students belonging to a particular stream of Engineering and Technology are not entitled to the open electives offered by their parent Department. However, they can opt for an elective offered by other Departments, provided they satisfy the prerequisite condition if any. Registration to open electives shall be documented under the guidance of the Program Coordinator/ Advisor/Mentor. The minimum numbers of students' strength for offering Open Elective Course is 10. However, this condition shall not be applicable to class where the admission to the program is less than 10.

PROJECT WORK: The objective of the Project work is

- (i) To encourage independent learning and the innovative attitude of the students.
- (ii) To develop interactive attitude, communication skills, organization, time management, and presentation skills.
- (iii) To impart flexibility and adaptability.
- (iv) To inspire team working.
- (v) To expand intellectual capacity, credibility, judgment and intuition.
- (vi) To adhere to punctuality, setting and meeting deadlines.
- (vii) To install responsibilities to oneself and others.
- (viii) To train students to present the topic of project work in a seminar without any fear, face the audience confidently, enhance communication skills, involve ingroup discussion to present and exchange ideas.

CIE procedure for Project Work:

(1) **Single discipline:** The CIE marks shall be awarded by a committee consisting of the Head of the concerned Department and two senior faculty members of the Department, one of whom shall be the Guide.

The CIE marks awarded for the project work, shall be based on the evaluation of the project work Report, project presentation skill, and question and answer session in the ratio 50:25:25. The marks awarded for the project report shall be the same for all the batch mates.

(2) **Interdisciplinary:** Continuous Internal Evaluation shall be group-wise at the college level with the participation of all guides of the college. Participation of external guide/s, if any, is desirable. The CIE marks awarded for the project work, shall be based on the evaluation of project work Report, project presentation skill, and question and answer session in the ratio 50:25:25. The marks awarded for the project report shall be the same for all the batch mates.

SEE procedure for Project Work: SEE for project work will be conducted by the two examiners appointed by the University. The SEE marks awarded for the project work shall be based on the evaluation of project work Report, project presentation skill, and question and answer session in the ratio 50:25:25.

Skswamy



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Scheme A- VIIISEMESTER (Swappable VII and VIII SEMESTER)

Sl. No	Course and Course Code		Course Title	Teaching Department (TD) and Question Paper Setting Board (PSB)	Teaching Hours /Week					Examination			
					Theor y	Tutorial	Practical / Drawin	Self-Study	Duration in hours	CIE Marks	SEE Marks	Total Marks	
					L	T	P	S					
1	PEC	CSE23801x	Professional Elective -IV (Online Courses)	TD: CSE PSB: CSE	3	0	0		03	50	50	100	3
2	OEC	CSE23802x	Open Elective - III (Online Courses)	TD: CSE PSB: CSE	3	0	0		03	50	50	100	3
3	INT	CSEI23803	Internship (Industry/Research) (14 - 20 weeks)	---	0	0	12		03	100	100	200	10
Total										200	200	400	16

Professional Elective Course (Online courses)

CSE23801A	BOS will publish courses based on the availability	CSE23801C	BOS will publish courses based on the availability
CSE23801B	BOS will publish courses based on the availability	CSE23801D	BOS will publish courses based on the availability

Open Elective Courses (Online Courses)

CSE23802A	BOS will publish courses based on the availability	CSE23802C	BOS will publish courses based on the availability
CSE23802B	BOS will publish courses based on the availability	CSE23802D	BOS will publish courses based on the availability

L: Lecture, T: Tutorial, P: Practical S= SDA: Skill Development Activity, CIE: Continuous Internal Evaluation, SEE: Semester End Evaluation. TD- Teaching Department, PSB: Paper Setting department, OEC: Open Elective Course, PEC: Professional Elective Course. PROJ: Project work, INT: Industry Internship / Research Internship / Rural Internship

H. P. Rajeshwar Swas

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Shashmy

Note: VII and VIII semesters of IV years of the program

Swapping Facility

- Institutions can swap VII and VIII Semester Scheme of Teaching and Examinations to accommodate **research internships/ industry internships/Rural Internship** after the VI semester.
- Credits earned for the courses of VII and VIII Semester Scheme of Teaching and Examinations shall be counted against the corresponding semesters whether VII or VIII semester is completed during the beginning of IV year or later part of IV year of the program.

Elucidation:

At the beginning of IV years of the program i.e., after VI semester, VII semester classwork and VIII semester **Research Internship /Industrial Internship / Rural Internship** shall be permitted to be operated simultaneously by the University so that students have ample opportunity for an internship. In other words, a good percentage of the class shall attend VII semester classwork and a similar percentage of others shall attend to Research Internship or Industrial Internship or Rural Internship.

Research/Industrial /Rural Internship shall be carried out at an Industry, NGO, MSME, Innovation centre, Incubation centre, Start-up, centre of Excellence (CoE), Study Centre established in the parent institute and /or at reputed research organizations/institutes.

The mandatory Research internship /Industry internship / Rural Internship is for 14 to 20 weeks. The internship shall be considered as a head of passing and shall be considered for the award of a degree. Those, who do not take up/complete the internship shall be declared to fail and shall have to complete it during the subsequent University examination after satisfying the internship requirements.

Research internship: A research internship is intended to offer the flavour of current research going on in the research field. It helps students get familiarized with the field and imparts the skill required for carrying out research.

Industry internship: Is an extended period of work experience undertaken by students to supplement their degree for professional development. It also helps them learn to overcome unexpected obstacles and successfully navigate organizations, perspectives, and cultures. Dealing with contingencies helps students recognize, appreciate, and adapt to organizational realities by tempering their knowledge with practical constraints.

Rural Internship: Rural development internship is an initiative of Unnat Bharat Abhiyan Cell, RGIT in association with AICTE to involve students of all departments studying in different academic years for exploring various opportunities in techno-social fields, to connect and work with Rural India for their upliftment.

The faculty coordinator or mentor has to monitor the student's internship progress and interact with them to guide for the successful completion of the internship. The students are permitted to carry out the internship anywhere in India or abroad. University shall not bear any expenses incurred in respect of the internship.

With the consent of the internal guide and Principal of the Institution, students shall be allowed to carry out the internship at their hometown (**within or outside the state or abroad**), provided favorable facilities are available for the internship and the student remains regularly in contact with the internal guide. **University shall not bear any cost involved in carrying out the internship by students.** However, students can receive any financial assistance extended by the organization.

Professional Elective /Open Elective Course: These are ONLINE courses suggested by the respective Board of Studies. Details of these courses shall be made available for students on the VTU web portal.

Shekhar



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B.E. in Computer Science and Engineering Scheme of Teaching and Examinations 2023

Outcome Based Education (OBE) and Choice Based Credit System (CBCS)

(Effective from the academic year 2023-24)



Scheme B: VII and VIII semesters for the candidates who seek an internship with project work

Sl. No	Course and Course Code		Course Title	Teaching Department (TD) and Question Paper Setting Board (PSB)	Teaching Hours /Week				Examination				Credits
					Theory Lecture	Tutorial	Practical/ Drawing	Self -Study	Duration in hours	CIE Marks	SEE Marks	Total Marks	
1	PCC	CSE23701	Deep Learning To be completed in 5th /6th semester	TD: CSE PSB: CSE	3	0	2		03	50	50	100	4
2	PCC	CSE23702	Cryptography & Network Security To be completed in 5th /6th semester	TD: CSE PSB: CSE	3	0	2		03	50	50	100	4
3	PCC	CSE23703	Internet of Things To be completed in 6th semester	TD: CSE PSB: CSE	4	0	0		03	50	50	100	4
4	PEC	CSE23714x	Professional Elective Course (MOOC Courses)	TD: CSE PSB: CSE	3	0	0		03	50	50	100	3
5	OEC	CSE23755x	Open Elective Courses (MOOC courses)	TD: CSE PSB: CSE	3	0	0		01	50	50	100	3
1	PEC	CSE23801x	Professional Elective -IV (Online Courses)	TD: CSE PSB: CSE	3	0	0		03	50	50	100	3
2	OEC	CSE23802x	Open Elective - III (Online Courses)	TD: CSE PSB: CSE	3	0	0		01	50	50	100	3
3	PROJ	CSEP23883	Project – Outcome of Training	TD: CSE PSB: CSE	0	0	12		03	100	100	200	8
4	INT	CSEI23804	Internship (Industry/Research) (02 semesters)	TD: CSE	0	0	12		03	100	100	200	10
Total									550	550	1100	42	

Signature

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Scheme B-VI SEMESTER for the candidates who seek a two-semester internship with project work /Start-up

Sl. No	Course and Course Code		Course Title	Teaching Department (TD) and Question Paper Setting Board (PSB)	Teaching Hours /Week				Examination				Credits
					Theory Lecture	Tutorial	Practical/ Drawing	Self -Study	Duration in hours	CIE Marks	SEE Marks	Total Marks	
1	IPCC	CSE23601	Cloud Computing	TD: CSE PSB: CSE	3	0	2		03	50	50	100	3
2	PCC	CSE23602	Machine Learning	TD: CSE PSB: CSE	3	0	0		03	50	50	100	4
3	PEC	CSE23603x	Professional Elective - II	TD: CSE PSB: CSE	4	0	0		03	50	50	100	3
4	OEC	CSE23604x	Open Elective - I	TD: CSE PSB: CSE	3	0	0		03	50	50	100	3
5	PCCL	CSEL23605	Machine Learning Lab	TD: CSE PSB: CSE	0	0	2		01	50	50	100	1
6	AEC	CSEL23606X	Ability Enhancement Course/Skill Development Course V	TD: CSE PSB: CSE	If the course is offered as a Theory				03	50	50	100	2
					2	0	0						
					If course is offered as a practical								
7	MC	NSK23657	National Service Scheme (NSS)	NSS coordinator	0	0	2		03	100	-	100	0
		PEK23657	Physical Education (PE) (Sports and Athletics)	Physical Education Director					03				
		YOK23657	Yoga	Yoga Teacher					01				
8	IKS	IKSK23608	Indian Knowledge System	Any Department	0	0	12		03	100	0	100	0
Total									500	300	800	16	

Skswamy

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