

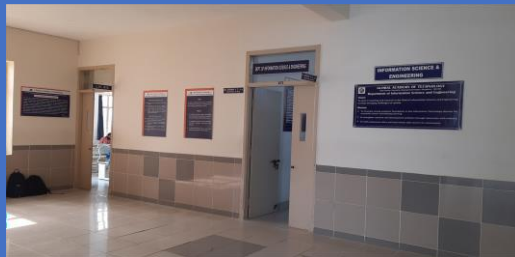


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SCHEME & SYLLABUS



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



Department of Information Science
and Engineering

III -VIII Semester Scheme (2024-25)

Information Science & Engineering

AUTONOMOUS-2024

GLOBAL ACADEMY OF TECHNOLOGY

(Autonomous institution affiliated to VTU, Belagavi.

Accredited by NAAC with 'A' grade,

NBA Accredited CS, E&C, E&E, MECH and IS branches)

Ideal Homes Township,

Raja Rajeshwari Nagar, Bengaluru-560098.



Global Academy of Technology

(An Autonomous Institution, affiliated to VTU, Belagavi, recognized by Karnataka and Approved by AICTE, New Delhi.)

B.E. in Information Science and Engineering Scheme of Teaching and Examinations (AY 2024-25)

III SEMESTER

Sl. No	Course	Course Code	Course Title	Teaching Department (TD) and Question Paper Setting Board (PSB)	Teaching Hours /Week				Examination				Credits
					Theory Lecture	Tutorial	Practical/ Drawing	SDA	Duration in hours	CIE Marks	SEE Marks	Total Marks	
					L	T	P	S					
1	PCC/BSC	BMATS24301	Discrete Mathematics	TD:Maths PSB:Maths	3	0	0	0	03	50	50	100	3
2	IPCC	BIS24302	Operating System (Integrated)	TD: ISE PSB: ISE	3	0	2	0	03	50	50	100	4
3	IPCC	BIS24303	Digital Logic Design and Computer Organization (Integrated)	TD: ISE PSB: ISE	3	0	2	0	03	50	50	100	4
4	PCC	BIS24304	Data Structures and Applications	TD: ISE PSB: ISE	3	0	0	0	03	50	50	100	3
5	PCCL	BISL24305	Data Structures laboratory	TD: ISE PSB: ISE	0	0	2	0	03	50	50	100	1
6	ETC/PLC	BIS24306x	ETC/PLC	TD: ISE PSB: ISE	3	0	0	0	03	50	50	100	3
7	UHV	BSCK24307	Social Connect and Responsibility	Any Department	0	0	2	0	01	100	---	100	1
8	AEC/ SEC	BIS24358x	Ability Enhancement Course/Skill Enhancement Course - III		If the course is a Theory				01	50	50	100	1
					1	0	0	0					
					If a course is a laboratory				02				
					0	0	2						
9	MC	BNSK24359	National Service Scheme (NSS)	NSS coordinator	0	0	2	0		100	---	100	0
		BPEK24359	Physical Education (PE) (Sports and Athletics)	Physical Education Director									
		BYOK24359	Yoga	Yoga Teacher									
		BLAK24359	Liberal Arts	Prominent NGO									
Total									550	350	900	20	

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 :** This letter in the course code indicates common to all the stream of engineering. **ESC:** Engineering Science Course, **ETC:** Emerging Technology Course, **PLC:** Programming Language Course

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Emerging Technology Course/Programming Language Course (ETC/PLC)			
BIS24306A	Object Oriented Programming with JAVA	BIS24306C	Unix System Programming
BIS24306B	Object Oriented Programming with C++	BIS24306D	Microcontroller
Ability Enhancement Course/Skill Enhancement Course – III			
BIS24358A	R Programming	BIS24358C	Project Management with Git
BIS24358B	Data Analytics with Excel	BIS24358D	Data Visualization with Python



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IV SEMESTER

Sl. No	Course	Course Code	Course Title	Teaching Department (TD) and Question Paper Setting Board (PSB)	Teaching Hours /Week				Examination				Credits
					Theory Lecture	Tutorial	Practical/ Drawing	SDA	Duration in hours	CIE Marks	SEE Marks	Total Marks	
1	PCC/BSC	BMATS24401	Statistics, Probability and Graph Theory	TD:Maths PSB:Maths	3	0	0	0	03	50	50	100	3
2	IPCC	BIS24402	Database Management System (Integrated)	TD: ISE PSB: ISE	3	0	2	0	03	50	50	100	4
3	PCC	BIS24403	Design and Analysis of Algorithms	TD: ISE PSB: ISE	3	0	0	0	03	50	50	100	3
4	PCC	BIS24404	Operating System Internals: Linux Focus	TD: ISE PSB: ISE	3	0	0	0	03	50	50	100	3
5	PCCL	BISL24405	Design and Analysis of Algorithms Laboratory	TD: ISE PSB: ISE	0	0	2	0	03	50	50	100	1
6	ETC/PLC	BIS24406x	ETC/PLC	TD: ISE PSB: ISE	3	0	0	0	03	50	50	100	3
7	AEC/ SEC	BIS24457x	Ability Enhancement Course/Skill Enhancement Course- IV	TD and PSB: Concerned department	If the course is Theory				01	50	50	100	1
					1	0	0	0					
					If the course is a lab				02				
					0	0	2	0					
8	BSC	BBOK24407	Biology For Engineers	TD / PSB: BT, CHE,	1	0	0	0	01	50	50	100	1
9	UHV	BUHK24408	Universal human values course	Any Department	1	0	0	0	01	50	50	100	1
10	MC	BNSK24459	National Service Scheme (NSS)	NSS coordinator	0	0	2			100	---	100	0
		BPEK24459	Physical Education (PE) (Sports and Athletics)	Physical Education Director									
		BYOK24459	Yoga	Yoga Teacher									
		BLAK24459	Liberal Arts	Prominent NGO									
Total										550	450	1000	20

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 :This letter in the course code indicates common to all the stream of engineering.

Ability Enhancement Course / Skill Enhancement Course – IV

BIS24457A	Green IT and Sustainability	BIS24457C	User Interface and User Experience Design
BIS24457B	Capacity Planning for IT	BIS24457D	LaTeX: A Tool for Academic Writing
Emerging Technology Course/Programming Language Course (ETC/PLC)			
BIS24406A	Advanced Java	BIS24406C	Modern Database Systems: NoSQL
BIS24406B	Modern Programming Paradigms : Scala	BIS24406D	Concurrent and Scalable Programming: Go Lang



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B.E. in Information Science and Engineering Scheme of Teaching and Examinations (AY 2024-25)

V SEMESTER

Sl. No	Course	Course Code	Course Title	Teaching Department (TD) and Question Paper Setting Board (PSB)	Teaching Hours /Week				Examination				Credits
					Theory Lecture	Tutorial	Practical/ Drawing	SDA	Duration in hours	CIE Marks	SEE Marks	Total Marks	
1	HSMC	BIS24501	Software Engineering and Project Management	TD: ISE PSB: ISE	3	0	0		03	50	50	100	3
2	IPCC	BIS24502	Computer Networks (Integrated)	TD: ISE PSB: ISE	3	0	2		03	50	50	100	4
3	PCC	BIS24503	Theory of Computation	TD: ISE PSB: ISE	3	0	0		03	50	50	100	3
4	PCCL	BISL24504	Data Visualization Laboratory	TD: ISE PSB: ISE	0	0	2		03	50	50	100	1
5	PEC	BIS24505x	Professional Elective Course I	TD: ISE PSB: ISE	3	0	0		03	50	50	100	3
6	AEC/ SEC	BIS24556x	Ability Enhancement Course/Skill Enhancement Course- V		If the course is Theory				01	50	50	100	1
					1	0	0						
					If the course is Lab				02				
					0	0	2						
7	PROJ	BISP24507	Mini Project		0	0	4		03	100	-	100	2
8	AEC	BRMK24557	Research Methodology and IPR	Any Department	2	2	0		03	50	50	100	3
9	MC	BESK24508	Environmental Studies	Civil	1	0	0		01	100	--	100	0
10	MC	BNSK24559	National Service Scheme (NSS)	NSS coordinator	0	0	2			100	--	100	0
		BPEK24559	Physical Education (PE) (Sports and Athletics)	Physical Education Director									
		BYOK24559	Yoga	Yoga Teacher									
		BLAK24559	Liberal Arts	Prominent NGO									
Total										650	350	1000	20

Professional Elective Course I			
BIS24505A	Digital Image Processing	BIS24505C	Cloud Computing
BIS24505B	Distributed Systems	BIS24505D	Wireless Sensor Networks
Ability Enhancement Course / Skill Enhancement Course – V			
BIS24556A	Web technology	BIS24556C	OpenGL: Foundations of Graphics Programming
BIS24556B	Lex and Yacc: Tools for Language Processing	BIS24556D	Robotic Process Automation



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B.E. in Information Science and Engineering Scheme of Teaching and Examinations (AY 2024-25)

VI SEMESTER

Sl. No	Course	Course Code	Course Title	Teaching Department (TD) and Question Paper Setting Board (PSB)	Teaching Hours /Week				Examination				Credits
					Theory Lecture	Tutorial	Practical/ Drawing	SDA	Duration in hours	CIE Marks	SEE Marks	Total Marks	
1	IPCC	BIS24601	Full Stack Development	TD: ISE PSB: ISE	3	0	2		03	50	50	100	4
2	PCC	BIS24602	Machine Learning	TD: ISE PSB: ISE	3	0	0		03	50	50	100	3
3	PCC	BIS24603	Ethical Hacking	TD: ISE PSB: ISE	3	0	0		03	50	50	100	3
4	PEC	BIS24604x	Professional Elective Course II	TD: ISE PSB: ISE	3	0	0		03	50	50	100	3
5	OEC	BIS24605x	Open Elective Course I	TD: ISE PSB: ISE	3	0	0		03	50	50	100	3
6	PROJ	BISP24606	Project Phase I	TD: ISE PSB: ISE	0	0	4		03	100	--	100	2
7	PCCL	BISL24607	Machine Learning Laboratory	TD: ISE PSB: ISE	0	0	2		03	50	50	100	1
8	AEC/SDC	BIS24657x	Ability Enhancement Course/Skill Development Course VI	TD: ISE PSB: ISE	If the course is offered as a Theory				01	50	50	100	1
					1	0	0						
					If course is offered as a practical				02				
					0	0	2						
9	IKS	BIKS24608	Indian Knowledge System	Any Dept.	1	0	0		01	100	---	100	0
10	MC	BNSK24659	National Service Scheme (NSS)	NSS coordinator	0	0	2			100	---	100	0
		BPEK24659	Physical Education (PE) (Sports and Athletics)	Physical Education Director									
		BYOK24659	Yoga	Yoga Teacher									
		BLAK24659	Liberal Arts	Prominent NGO									
Total									650	350	1000	20	
Professional Elective Course II													
BIS24604A		Blockchain Technology			BIS24604C		Compiler Design						
BIS24604B		5G Technology			BIS24604D		Information Retrieval						

Open Elective Course I			
BIS24605A	Introduction to Data Structures	BIS24605C	Mobile Application Development
BIS24605B	Introduction to Operating Systems	BIS24605D	Web Technology
Ability Enhancement Course / Skill Enhancement Course-VI			
BIS24657A	TOSCA- Automated Software Testing	BIS24657C	Generative AI: From Theory to Practice
BIS24657B	React: Building Interactive Web Interfaces	BIS24657D	DevOps: Principles and Practices





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B.E. in Information Science and Engineering

Scheme of Teaching and Examinations (AY 2024-25)

VII SEMESTER (Swappable VII and VIII SEMESTER)

Sl. No	Course	Course Code	Course Title	Teaching Department (TD) and Question Paper Setting Board (PSB)	Teaching Hours /Week				Examination				Credits
					Theory Lecture	Tutorial	Practical/ Drawing	SDA	Duration in hours	CIE Marks	SEE Marks	Total Marks	
					L	T	P	S					
1	IPCC	BIS24701	Bigdata Analytics (Integrated)	TD: ISE PSB: ISE	3	0	2		03	50	50	100	4
2	IPCC	BIS24702	Parallel Computing (Integrated)	TD: ISE PSB: ISE	3	0	2		03	50	50	100	4
3	PCC	BIS24703	Information and Network Security	TD: ISE PSB: ISE	3	0	0		03	50	50	100	3
4	PEC	BIS24704x	Professional Elective Course / (Online) III	TD: ISE PSB: ISE	3	0	0		03	50	50	100	3
5	OEC	BIS24705x	Open Elective Course /(online) II	TD: ISE PSB: ISE	3	0	0		03	50	50	100	3
6	PROJ	BISP24706	Major Project Phase-II	TD: ISE PSB: ISE	0	0	14		03	100	100	200	7
										350	350	700	24

Professional Elective Course III

BIS24704A	Natural Language Processing	BIS24704C	Social Network Analysis
BIS24704B	Deep Learning	BIS24704D	Software Quality Analysis

Open Elective Course II

BIS24 705A	Database Management System	BIS24705C	Software Engineering
BIS24 705B	Ethical Hacking	BIS24705D	Unix Shell Programming

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.



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VIII SEMESTER (Swappable VII and VIII SEMESTER)

VIII SEMESTER (Swappable VII and VIII SEMESTER)													
Sl. No	Course	Course Code	Course Title	Teaching Department (TD) and Question Paper Setting Board (PSB)	Teaching Hours /Week				Examination				Credits
					Theory Lecture	Tutorial	Practical/ Drawing	SDA	Duration in hours	CIE Marks	SEE Marks	Total Marks	
					L	T	P	S					
1	PEC	BIS24801x	Professional Elective (Online Courses) IV	TD: ISE PSB: ISE	3	0	0		03	50	50	100	3
2	PEC	BIS24802x	Professional Elective (Online Courses) V	TD: ISE PSB: ISE	3	0	0		03	50	50	100	3
3	INT	BIS24803	Internship (Industry/Research) (14 - 20 weeks)	TD: ISE PSB: ISE	0	0	12		03	100	100	200	10
										200	200	400	16

Professional Elective Course (Online courses) IV

BIS24801A	Quantum Algorithms and Cryptography https://online.vtu.ac.in/course-details/quantum-algorithms-and-cryptography	BIS24801C	Introduction To Industry 4.0 And Industrial Internet Of Things https://online.vtu.ac.in/course-details/Introduction-To-Industry-40-And-Industrial-Internet-Of-Things
BIS24801B	Reinforcement Learning https://online.vtu.ac.in/course-details/Reinforcement-Learning	BIS24801D	GPU Architectures and Programming https://online.vtu.ac.in/course-details/GPU-Architectures-And-Programming

Professional Elective Course (Online courses) V

BIS24802A	Applied Accelerated Artificial Intelligence https://online.vtu.ac.in/coursedetails/Applied-AcceleratedArtificial-Intelligence	BIS24802C	Introduction To Game Theory And Mechanism Design https://online.vtu.ac.in/coursedetails/Introduction-To-GameTheory-And- Mechanism-Design
BIS24802B	Advanced Distributed Systems https://online.vtu.ac.in/coursedetails/advanced-distributed-systems	BIS24802D	Privacy And Security In Online Social Media https://online.vtu.ac.in/coursedetails/Privacy-and-Security-inOnline-Social-Media

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

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 center, 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 flavor 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.



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VI SEMESTER(A)

Sl. No	Course	Course Code	Course Title	Teaching Department (TD) and Question Paper Setting Board (PSB)	Teaching Hours /Week				Examination				Credits
					Theory Lecture	Tutorial	Practical/ Drawing	SDA	Duration in hours	CIE Marks	SEE Marks	Total Marks	
					L	T	P	S					
1	IPCC	BIS24601	Full Stack Development	TD: ISE PSB: ISE	3	0	2		03	50	50	100	4
2	PCC	BIS24602	Machine Learning	TD: ISE PSB: ISE	3	0	0		03	50	50	100	3
3	PCC	BIS24603	Ethical Hacking	TD: ISE PSB: ISE	3	0	0		03	50	50	100	3
4	PEC	BIS24604x	Professional Elective Course II	TD: ISE PSB: ISE	3	0	0		03	50	50	100	3
5	OEC	BIS24605x	Open Elective Course I	TD: ISE PSB: ISE	3	0	0		03	50	50	100	3
6	PROJ	BISP24606	Project Phase I	TD: ISE PSB: ISE	0	0	4		03	100	--	100	2
7	PCCL	BISL24607	Machine Learning Laboratory	TD: ISE PSB: ISE	0	0	2		03	50	50	100	1
8	AEC/SDC	BIS24657x	Ability Enhancement Course/Skill Development Course V	TD: ISE PSB: ISE	If the course is offered as a Theory				01	50	50	100	1
					1	0	0						
					If course is offered as a practical				02				
					0	0	2						
9	IKS	BIKS24608	Indian Knowledge System	Any Department	1	0	0		01	100	--	100	0
10	MC	BNSK24659	National Service Scheme (NSS)	NSS coordinator	0	0	2	--	---	100	---	100	0
		BPEK24659	Physical Education (PE) (Sports and Athletics)	Physical Education Director									
		BYOK24659	Yoga	Yoga Teacher									
		BLAK24659	Liberal Arts	Prominent NGO									
Total									650	350	1000	20	



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B.E. in Information Science and Engineering Scheme of Teaching and Examinations (AY 2024-25)

VII and VIII semesters for the candidate those who seek an internship with project work (A)

Sl. No	Course	Course Code	Course Title	Teaching Department (TD) and Question Paper Setting Board (PSB)	Teaching Hours /Week				Examination				Credits
					Theory Lecture	Tutorial	Practical/ Drawing	SDA	Duration in hours	CIE Marks	SEE Marks	Total Marks	
					L	T	P	S					
1	IPCC	BIS24701	Bigdata Analytics (Integrated)	TD: ISE PSB: ISE	3	0	2		03	50	50	100	4
2	IPCC	BIS24702	Parallel Computing (Integrated)	TD: ISE PSB: ISE	3	0	2		03	50	50	100	4
3	PCC	BIS24703	Information and Network Security	TD: ISE PSB: ISE	3	0	0		03	50	50	100	3
4	PEC	BIS24704x	Professional Elective Course/Online III	TD: ISE PSB: ISE	3	0	0		03	50	50	100	3
5	OEC	BIS24705x	Open Elective Courses/Online II	TD: ISE PSB: ISE	3	0	0		03	50	50	100	3
1	PEC	BIS24801x	Professional Elective (MOOC Courses) IV	TD: ISE PSB: ISE	3	0	0		03	50	50	100	3
2	PEC	BIS24802x	Professional Elective (MOOC Courses) V	TD: ISE PSB: ISE	3	0	0		03	50	50	100	3
3	INT	BIS24803	Internship (Industry/Research) (02 semesters)	TD: ISE PSB: ISE	0	0	12		03	100	100	200	10
4	PROJ	BISP24804	Major Project II - outcome of training	TD: ISE PSB: ISE	0	0	14		03	100	100	200	7
										550	550	1100	40