



First Year Scheme & Syllabus (2023 Scheme)

SCHEME AND SYLLABUS



Computer Science and Engineering
Stream

GLOBAL ACADEMY OF TECHNOLOGY
Autonomous institution affiliated to VTU, Belagavi.
Raja Rajeshwari Nagar, Bengaluru-560098.

GLOBAL ACADEMY OF TECHNOLOGY (Autonomous Institution Under VTU)
Scheme of Teaching and Examination 2023–24 (Effective from the academic year 2023 – 24)

I SEMESTER B.E. (PHYSICS GROUP) – CSE Stream (CSE/ISE/AD/AI/CS(AM))

Sl. No	Course and Course Code		Course title	Offering Department	Teaching Department	Teaching Hours / Week			Examination			Credits
						Theory Lecture	Tutorial	Practical / Drawing	CIE Marks	SEE Marks	Total Marks	
						L	T	P				
1	ASC	23MAT11A	MATHEMATICS I FOR CSE STREAM	MAT	MAT	3	2	0	50	50	100	4
2	ASC	23PHY12A	APPLIED PHYSICS FOR CSE STREAM (INTEGRATED)	PHY	PHY	3	0	2	50	50	100	4
3	ESC	23CSE13	PRINCIPLES OF PROGRAMMING USING C (INTEGRATED)	CSE	ANY	3	0	2	50	50	100	4
4	ESC-1	23ESC14B	INTRODUCTION TO ELECTRICAL ENGINEERING	EEE	EEE	3	0	0	50	50	100	3
5	ETC-1	23ETC15A	INTRODUCTION TO AI	AI&DS	ANY	3	0	0	50	50	100	3
6	AEC	23EGH16	COMMUNICATIVE ENGLISH	HUMANITIES	ANY	1	0	0	50	50	100	1
7	HSMC	23KSK17/ 23KBK17	SAMSKRUTIKA KANNADA / BALAKE KANNADA	HUMANITIES	ANY	1	0	0	50	50	100	1
TOTAL						17	2	4	350	350	700	20
Note: ASC- Applied Science Course, ESC- Engineering Science Course, ETC – Emerging Technology Course, PLC – Programming Language Course, , HSMC- Humanity, Social Science and Management course, AEC – Ability Enhancement Course.												


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GLOBAL ACADEMY OF TECHNOLOGY (Autonomous Institution Under VTU)
Scheme of Teaching and Examination 2023–24 (Effective from the academic year 2023– 24)

I SEMESTER B.E. (CHEMISTRY GROUP) – CSE Stream (CSE/ISE/AD/AI/CS(AM))

Sl. No	Course and Course Code		Course title	Offering Department	Teaching Department	Teaching Hours / Week			Examination			Credits
						Theory Lecture	Tutorial	Practical / Drawing	CIE Marks	SEE Marks	Total Marks	
						L	T	P				
1	ASC	23MAT11A	MATHEMATICS I FOR CSE STREAM	MAT	MAT	3	2	0	50	50	100	4
2	ASC	23CHE12A	APPLIED CHEMISTRY FOR CSE STREAM (INTEGRATED)	CHE	CHE	3	0	2	50	50	100	4
3	ESC	23CSE13	PRINCIPLES OF PROGRAMMING USING C (INTEGRATED)	CSE	ANY	3	0	2	50	50	100	4
4	ESC-1	23ESC14A	INTRODUCTION TO ELECTRONICS AND COMMUNICATION	ECE	ECE	3	0	0	50	50	100	3
5	ESC	23MEG15	COMPUTER AIDED ENGINEERING DRAWING	ME	ME	2	0	2	50	50	100	3
6	HSMC	23IDT16	INNOVATION AND DESIGN THINKING	HUMANITIES	ANY	1	0	0	50	50	100	1
7	HSMC	23CIP17	INDIAN CONSTITUTION	HUMANITIES	ANY	1	0	0	50	50	100	1
TOTAL						16	2	6	350	350	700	20
Note: ASC- Applied Science Course, ESC- Engineering Science Course, ETC – Emerging Technology Course, PLC – Programming Language Course, , HSMC- Humanity, Social Science and Management course, AEC – Ability Enhancement Course												


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GLOBAL ACADEMY OF TECHNOLOGY (Autonomous Institution Under VTU)
Scheme of Teaching and Examination 2023–24 (Effective from the academic year 2023 – 24)

II SEMESTER B.E. (PHYSICS GROUP) – CSE Stream (CSE/ISE/AD/AI/CS(AM))

Sl. No	Course and Course Code		Course title	Offering Department	Teaching Department	Teaching Hours / Week			Examination			Credits
						Theory Lecture	Tutorial	Practical / Drawing	CIE Marks	SEE Marks	Total Marks	
						L	T	P				
1	ASC	23MAT21A	MATHEMATICS II FOR CSE STREAM	MAT	MAT	3	2	0	50	50	100	4
2	ASC	23PHY22A	APPLIED PHYSICS FOR CSE STREAM (INTEGRATED)	PHY	PHY	3	0	2	50	50	100	4
3	PLC-2	23PLC23A	ADVANCED PROGRAMMING IN C (INTEGRATED)	CSE	ANY	3	0	2	50	50	100	4
4	ESC-2	23ESC24B	INTRODUCTION TO ELECTRICAL ENGINEERING	EEE	EEE	3	0	0	50	50	100	3
5	ETC-2	23ETC25A	INTRODUCTION TO AI	AI&DS	ANY	3	0	0	50	50	100	3
6	AEC	23EGH26	COMMUNICATIVE ENGLISH	HUMANITIES	ANY	1	0	0	50	50	100	1
7	HSMC	23KSK27/ 23KBK27	SAMSKRUTIKA KANNADA / BALAKE KANNADA	HUMANITIES	ANY	1	0	0	50	50	100	1
TOTAL						17	2	4	350	350	700	20

Note: ASC- Applied Science Course, ESC- Engineering Science Course, ETC – Emerging Technology Course, PLC – Programming Language Course, , HSMC- Humanity, Social Science and Management course, AEC – Ability Enhancement Course

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II SEMESTER B.E. (CHEMISTRY GROUP) – CSE Stream (CSE/ISE/AD/AI/CS(AM))

Sl. No	Course and Course Code		Course title	Offering Department	Teaching Department	Teaching Hours / Week			Examination			Credits
						Theory Lecture	Tutorial	Practical / Drawing	CIE Marks	SEE Marks	Total Marks	
						L	T	P				
1	ASC	23MAT21A	MATHEMATICS II FOR CSE STREAM	MAT	MAT	3	2	0	50	50	100	4
2	ASC	23CHE22A	APPLIED CHEMISTRY FOR CSE STREAM (INTEGRATED)	CHE	CHE	3	0	2	50	50	100	4
3	PLC-2	23PLC23A	ADVANCED PROGRAMMING IN C (INTEGRATED)	CSE	ANY	3	0	2	50	50	100	4
4	ESC-2	23ESC24A	INTRODUCTION TO ELECTRONICS AND COMMUNICATION	ECE	ECE	3	0	0	50	50	100	3
5	ESC	23MEG25	COMPUTER AIDED ENGINEERING DRAWING	ME	ME	2	0	2	50	50	100	3
6	HSMC	23IDT26	INNOVATION AND DESIGN THINKING	HUMANITIES	ANY	1	0	0	50	50	100	1
7	HSMC	23CIP27	INDIAN CONSTITUTION	HUMANITIES	ANY	1	0	0	50	50	100	1
TOTAL						16	2	6	350	350	700	20

Note: ASC- Applied Science Course, ESC- Engineering Science Course, ETC – Emerging Technology Course, PLC – Programming Language Course, , HSMC- Humanity, Social Science and Management course, AEC – Ability Enhancement Course


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Engineering Science Courses (ESC-1 / ESC-2)					Credits	Emerging Technology Courses (ETC-1 / ETC-2)					Credits
Code	Title	L	T	P		Code	Course Title	L	T	P	
23ESC14A/24A	INTRODUCTION TO ELECTRONICS AND COMMUNICATION	3	0	0	3	23ETC15A/25A	INTRODUCTION TO AI	3	0	0	3
23ESC14B/24B	INTRODUCTION TO ELECTRICAL ENGINEERING	3	0	0	3	23ETC15B/25B	INTRODUCTION TO EMBEDDED SYSTEM	3	0	0	3
23ESC14C	INTRODUCTION TO C PROGRAMMING (INTEGRATED)	3	0	2	4	23ETC15C/25C	RENEWABLE ENERGY SOURCES	3	0	0	3
23ESC14D/24D	ENGINEERING MECHANICS	3	0	0	3	23ETC15D/25D	INTRODUCTION TO DRONES	3	0	0	3
						23ETC15E/25E	INTRODUCTION TO AUTOMATION & ROBOTICS	3	0	0	3
						23ETC15F/25F	WASTE MANAGEMENT	3	0	0	3
Programming Language Courses (PLC-1 / PLC-2)					Credits						
Code	Title	L	T	P							
23PLC23A	ADVANCED PROGRAMMING IN C (INTEGRATED)	3	0	2	4						
23PLC23B	INTRODUCTION TO PYTHON PROGRAMMING (INTEGRATED)	3	0	2	4						


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III - VIII Semester
2023 Scheme
Department of Artificial
Intelligence & Machine
Learning

SYLLABUS



GLOBAL ACADEMY OF TECHNOLOGY

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Accredited by NAAC with 'A' grade,
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Raja Rajeshwari Nagar, Bengaluru-560098

Professor & Head
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& Machine Learning
Global Academy of Technology
Bengaluru



DEPARTMENT OF ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING

Scheme of UG Autonomous Program – 2023 batch (3rd to 8th Semester)

III SEMESTER

Sl. No.	Course Code	Course Title	Course Type	Teaching Department (TD) and Question Paper Setting Board (PSB)	Teaching Hours/Week			Examination			CREDITS
					L	T	P	CIE	SEE	Total	
1	MAT23301A	Discrete Mathematics and Graph Theory	BS	TD - MAT	2	2	0	50	50	100	3
2	CSE23302	Data Structures	PC	TD – AIML /PSB - CSE	3	0	0	50	50	100	3
3	AML23303	Python Programming (Integrated)	IPC	TD/PSB - AIML	3	0	2	50	50	100	4
4	AML23304	Computer Organization and Operating System	PC		2	2	0	50	50	100	3
5	AML23305	Machine Learning Foundation	ETC		2	2	0	50	50	100	3
6	SCK23306	Social Connect and Responsibility	Any Department		0	0	2	100	---	100	1
7	AML23307X	Ability Enhancement Course-III	AEC		2 1	0 0	0 2	50	50	100	2
8	NSK23308	National Service Scheme (NSS)	MC	NSS coordinator	0	0	2	100	---	100	0
	PEK23308	Physical Education (PE) (Sports and Athletics)		Physical Education Director							
	YOK23308	Yoga		Yoga Teacher							
9	CSEL23309	Data Structures Laboratory	PCL	TD – AIML /PSB - CSE	0	0	2	50	50	100	1
Total								550	350	900	20

Ability Enhancement Course-III *

AML23307A	Web Application Frameworks	AML23307C	Project Management with Git
AML23307B	Ethics and Public Policy for AI	AML23307D	PHP Programming

*NPTEL for Credit transfer: Students can take 12 weeks NPTEL course as an equivalent to Program elective. The NPTEL courses of duration less than 12 weeks will not be considered for credit transfer. The courses (only technical) taken are as per the recommendation of BOS of respective department. The similarity of the contents as offered by NPTEL should not exceed a maximum of 40% of the courses being registered by the student. The NPTEL course need to be completed before the registration of the elective. Any certificate obtained after the registration of elective would not be considered. The validity of NPTEL certificate is for two years and it cannot be used more than once to avail the benefit. The student is eligible to transfer a maximum of nine credits in the entire duration of the program. The grades will be awarded as equivalent to the grades obtained in the NPTEL course.

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IV SEMESTER

Sl. No.	Course Code	Course Title	Course Type	Teaching Department (TD) and Question Paper Setting Board (PSB)	Teaching Hours/Week			Examination			CREDITS
					L	T	P	CIE	SEE	Total	
1	MAT23401A	Probability and Linear Algebra	BS	TD - MAT	2	2	0	50	50	100	3
2	CSE23402	Design and Analysis of Algorithms	PC	TD - AIML /PSB - CSE	3	0	0	50	50	100	3
3	AML23403	Database Management Systems (Integrated)	IPC	TD - AIML	3	0	2	50	50	100	4
4	AML23404	Machine Learning Techniques	PC		2	2	0	50	50	100	3
5	AML23405X	Engineering Science Course	ETC		2	2	0	50	50	100	3
6	UHK23406	Universal human values	UHV	HSS	1	0	0	50	50	100	1
7	AML23407X	Ability Enhancement Course-IV	AEC	TD - AIML	1	0	2	50	50	100	2
8	NSK23408	National Service Scheme (NSS)	MC	NSS coordinator	0	0	2	100	---	100	0
	PEK23408	Physical Education (PE) (Sports and Athletics)		Physical Education Director							
	YOK23408	Yoga		Yoga Teacher							
9	CSEL23409	Algorithms Laboratory	PCL	TD - AIML /PSB - CSE	0	0	2	50	50	100	1
Total								500	400	900	20

Ability Enhancement Course/Skill Enhancement Course-IV*

AML23407A	AI Tools, Frameworks & its Application I	AML23407C	MangoDB
AML23407B	Scala	AML23407D	MERN

Engineering Science Course (ESC/ETC/PLC)*

AML23405A	Object Oriented Programming using Java	AML23405C	Optimization Technique
AML23405B	Discrete Mathematical Structure	AML23405D	Algorithmic Game Theory

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V SEMESTER

Sl. No.	Course Code	Course Title	Course Type	Teaching Department (TD) and Question Paper Setting Board (PSB)	Teaching Hours/Week			Examination			CREDITS
					L	T	P	CIE	SEE	Total	
1	AML23501	Engineering Economics & Managment	HSMS	TD - AIML	3	0	0	50	50	100	3
2	AML23502	Machine Learning Practices (Integrated)	IPC		3	0	2	50	50	100	4
3	AML23503	Big data Analytics	PC		4	0	0	50	50	100	4
4	AMLL23504	Big data Analytics LAB	PCL		0	0	2	50	50	100	1
5	AML23505X	Program Elective 1	PEC		3	0	0	50	50	100	3
6	AML23506	Mini Project	PROJ		0	0	4	100	---	100	2
7	RMIK23507	Research Methodology and IPR	AEC	HSS	2	2	0	50	50	100	3
8	CIVK23508	Environmental Studies	MC	CV	2	0	0	50	50	100	2
9	NSK23509	National Service Scheme (NSS)	MC	NSS coordinator	0	0	2	100	---	100	0
	PEK23509	Physical Education (PE) (Sports and Athletics)		Physical Education Director							
	YOK23509	Yoga		Yoga Teacher							
Total								500	300	800	22

Program Elective 1*			
AML23505A	DevOPs Essentials	AML23505C	Introduction to Intelligent Networks
AML23505B	Microcontroller and Embedded System	AML23505D	Computer Networks and Security

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VI SEMESTER

Sl. No.	Course Code	Course Title	Course Type	Teaching Department (TD) and Question Paper Setting Board (PSB)	Teaching Hours/Week			Examination			CREDITS
					L	T	P	CIE	SEE	Total	
1	AML23601	Natural Language Processing	IPC	TD - AIML	3	0	2	50	50	100	4
2	AML23602	Deep Learning Principles & Practices	PC		3	0	0	50	50	100	3
3	AML23603X	Program Elective 2	PEC		3	0	0	50	50	100	3
4	AML23604X	Open Elective 1	OEC		3	0	0	50	50	100	3
5	AML23605	Project Phase 1	PROJ		0	0	6	50	50	100	3
6	AMLL23606	Deep Learning LAB	PCL		0	0	2	50	50	100	1
7	AML23607X	Ability Enhancement Course	AEC		1	0	2	50	50	100	2
8	NSK23608	National Service Scheme (NSS)	MC	NSS coordinator	0	0	2	100	---	100	0
	PEK23608	Physical Education (PE) (Sports and Athletics)		Physical Education Director							
	YOK23608	Yoga		Yoga Teacher							
9	IKSK23609	Indian Knowledge System	IKS	HSS(PSB)	1	0	0	50	50	100	0
Total								500	300	800	19

Program Elective 2*

AML23603A	Parallel and Distributed computing	AML23603C	Artificial Intelligence In Block Chain
AML23603B	Intelligent Embedded System	AML23603D	Time Series Analysis

Open Elective 1 (Offered to other branch students) *

AML23604A	Next-Gen Database Technology using MongoDB
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Ability Enhancement Course/Skill Enhancement Course*

AML23607A	AI Tools, Frameworks & its Application II	AML23607C	Explainable AI
AML23607B	Generative AI		

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SCHEME A

VII SEMESTER

Sl. No.	Course Code	Course Title	Course Type	Teaching Department (TD) and Question Paper Setting Board (PSB)	Teaching Hours/Week			Examination			CREDITS
					L	T	P	CIE	SEE	Total	
1	AML23701	Image Analytics with Computer Vision	IPC	TD - AIML	3	0	2	50	50	100	4
2	AML23702	Advance Natural Language Processing	IPC		3	0	2	50	50	100	4
3	AML23703	Quantum Computing	PC		3	2	0	50	50	100	4
4	AML23704X	Program Elective 3	PEC		3	0	0	50	50	100	3
5	AML23705X	Open Elective 2	OEC		3	0	0	50	50	100	3
6	AML23706	Major Project Phase-II	Any Department		0	0	12	100	100	100	6
Total								400	300	700	24

Program Elective 3*

AML23704A	Datamining and Data warehousing	AML23704C	Human Computer Interaction
AML23704B	Introduction to Robotics	AML23704D	Data Security & Privacy

Open Elective 2 (Offered to other branch students) *

AML23705A	Business Intelligence	AML23705B	Soft Computing
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H. M. Rajeshwarinagar

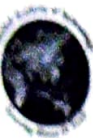
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Global Academy of Technology,

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SCHEME A

VIII SEMESTER

Sl. No.	Course Code	Course Title	Course Type	Teaching Department (TD) and Question Paper Setting Board (PSB)	Teaching Hours/Week			Examination			CREDITS
					L	T	P	CIE	SEE	Total	
1	AML23801X	Program Elective 4 (Online Courses)	PEC	TD - AIML	3	0	0	50	50	100	3
2	AML23802X	Open Elective (Online courses)	OEC		3	0	0	50	50	100	3
3	AML23803	Internship (14-20 Weeks)	INT		0	0	12	100	100	200	10
Total								200	200	400	16

Program Elective 4*

AML23801A	Augment Reality and Virtual Reality	AML23801C	Edge AI
AML23801B	Intelligent Robots and Drone Technologies	AML23801D	Reinforcement Learning

Open Elective *

AML23802A	High Performance Computing	AML23802C	MLOPS
AML23802B	Predictive Analysis and IoT		

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 center, Start-up, center 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 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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