



First Year Scheme & Syllabus (2022 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 2022–23 (Effective from the academic year 2022 – 23)

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	BSC	22MAT 11	LINEAR ALGEBRA AND CALCULUS	MAT	MAT	3	2	0	50	50	100	4
2	BSC	22CHE12	ENGINEERING CHEMISTRY (INTEGRATED)	CHE	CHE	3	0	2	50	50	100	4
3	ESC	22MEG13	COMPUTER AIDED ENGINEERING DRAWING	ME	ME	2	0	2	50	50	100	3
4	ESC-1	22ELE14	FUNDAMENTALS OF ELECTRICAL ENGINEERING	EEE	EEE	2	2	0	50	50	100	3
5	PLC-1	22ISE151	PYTHON PROGRAMMING (INTEGRATED)	ISE	ANY	3	0	2	50	50	100	4
6	HSMC	22IDT16	INNOVATION AND DESIGN THINKING	HUMANITIES	ANY	1	0	0	50	50	100	1
7	HSMC	22CIP17	CONSTITUION OF INDIA AND PROFESSIONAL ETHICS	HUMANITIES	ANY	1	0	0	50	50	100	1
TOTAL						15	4	6	350	350	700	20
Note: BSC- Basic Science Course, ESC- Engineering Science Course, HSMC- Humanity, Social Science and Management course, AEC – Ability Enhancement Course, ETC – Emerging Technology Course, PLC – Programming Language Course												



HEAD OF THE DEPARTMENT
 Dept of Science & Humanities
 Global Academy of Technology,
 Rajarajeshwari Nagar Bengaluru-98.



Dean Academic
 Global Academy of Technology,
 Rajarajeshwarinagar, Bengaluru-98

Scheme of Teaching and Examination 2022–23 (Effective from the academic year 2022 – 23)

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	BSC	22MAT 11	LINEAR ALGEBRA AND CALCULUS	MAT	MAT	3	2	0	50	50	100	4
2	BSC	22PHY12	ENGINEERING PHYSICS (INTEGRATED)	PHY	PHY	3	0	2	50	50	100	4
3	ESC-1	22ELN13	ELEMENTS OF ELECTRONICS ENGINEERING	ECE	ECE	2	2	0	50	50	100	3
4	ESC	22CSE14	C PROGRAMMING (INTEGRATED)	CSE	ANY	3	0	2	50	50	100	4
5	ETC-1	22ADS151	INTRODUCTION TO AI	AI&DS	ANY	3	0	0	50	50	100	3
6	AEC	22EGH16	COMMUNICATIVE ENGLISH	HUMANITIES	ANY	1	0	0	50	50	100	1
7	HSMC	22KSK17/ 22KKB17	Sanskrutika Kannada / Balake Kannada	HUMANITIES	ANY	1	0	0	50	50	100	1
TOTAL						16	4	4	350	350	700	20

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

GLOBAL ACADEMY OF TECHNOLOGY (Autonomous Institution Under VTU)
Scheme of Teaching and Examination 2022–23 (Effective from the academic year 2022 – 23)

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	BSC	22MAT 21	INTEGRAL CALCULUS AND DIFFERENTIAL EQUATION	MAT	MAT	3	2	0	50	50	100	4
2	BSC	22CHE22	ENGINEERING CHEMISTRY (INTEGRATED)	CHE	CHE	3	0	2	50	50	100	4
3	ESC	22MEG23	COMPUTER AIDED ENGINEERING DRAWING	ME	ME	2	0	2	50	50	100	3
4	ESC-2	22ELE24	FUNDAMENTALS OF ELECTRICAL ENGINEERING	EEE	EEE	2	2	0	50	50	100	3
5	PLC-2	22ISE251	PYTHON PROGRAMMING (INTEGRATED)	ISE	ANY	3	0	2	50	50	100	4
6	HSMC	22IDT26	INNOVATION AND DESIGN THINKING	HUMANITIES	ANY	1	0	0	50	50	100	1
7	HSMC	22CIP27	CONSTITUION OF INDIA AND PROFESSIONAL ETHICS	HUMANITIES	ANY	1	0	0	50	50	100	1
TOTAL						15	4	6	350	350	700	20
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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	BSC	22MAT 21	INTEGRAL CALCULUS AND DIFFERENTIAL EQUATION	MAT	MAT	3	2	0	50	50	100	4
2	BSC	22PHY22	ENGINEERING PHYSICS (INTEGRATED)	PHY	PHY	3	0	2	50	50	100	4
3	ESC-2	22ELN23	ELEMENTS OF ELECTRONICS ENGINEERING	ECE	ECE	2	2	0	50	50	100	3
4	ESC	22CSE24	C PROGRAMMING (INTEGRATED)	CSE	ANY	3	0	2	50	50	100	4
5	ETC-2	22ADS251	INTRODUCTION TO AI	AI&DS	ANY	3	0	0	50	50	100	3
6	AEC	22EGH26	COMMUNICATIVE ENGLISH	HUMANITIES	ANY	1	0	0	50	50	100	1
7	HSMC	22KSK27/ 22KBK27	Sanskritika Kannada / Balake Kannada	HUMANITIES	ANY	1	0	0	50	50	100	1
TOTAL						16	4	4	350	350	700	20

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



III - VIII Semester

2022 Scheme

Department of Artificial
Intelligence & Machine
Learning

SYLLABUS



GLOBAL ACADEMY OF TECHNOLOGY

Autonomous institution affiliated to VTU,
Belagavi.

Accredited by NAAC with 'A' grade,
Ideal Homes Township,

Raja Rajeshwari Nagar, Bengaluru-560098

Professor & Head
Dept. of Artificial Intelligence
& Machine Learning
Global Academy of Technology
Bengaluru

A. P. Rajarajeshwarinagar
Dean Academic

Global Academy of Technology,
Rajarajeshwarinagar, Benga. -98



DEPARTMENT OF ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING

Scheme of UG Autonomous Program – 2022 batch

III SEMESTER

Sl. No.	Course Code	Course Title	Course Type	Teaching Dept.	Teaching Hours/Week			Examination			CREDITS
					L	T	P	CIE	SEE	Total	
1	22MAT31A	Discrete Mathematics–I	BS	MAT	2	2	0	50	50	100	3
2	22AML32	Data Structures with Application (Integrated)	IPC	Respective Department	3	0	2	50	50	100	4
3	22AML33	Computer Organization and Architecture (Integrated)	IPC		3	0	2	50	50	100	4
4	22AML34	Operating System	PC		2	2	0	50	50	100	3
5	22AML35	Web Application Frameworks	ETC		2	2	0	50	50	100	3
6	22AML36	Software Engineering (Theory)	AEC		2	0	0	50	50	100	2
7	22AML37	Introduction to Innovative Project using Python			0	0	2	50	50	100	1
Total					Total			350	350	700	20

H. P. Rajarajeshwari
Dean Academic
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Rajarajeshwari Nagar, Bengaluru-560098

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& Machine Learning
Global Academy of Technology
Bengaluru



IV SEMESTER

Sl. No.	Course Code	Course Title	Course Type	Teaching Dept.	Teaching Hours/Week			Examination			CREDITS
					L	T	P	CIE	SEE	Total	
1	22MAT41A	Probability and Linear Algebra	BS	MAT	2	2	0	50	50	100	3
2	22AML42	Design & Analysis of Algorithms (Integrated)	IPC	Respective Department	3	0	2	50	50	100	4
3	22AML43	Database Management Systems (Integrated)	IPC		3	0	2	50	50	100	4
4	22AML44	Machine Learning Essentials	PC		2	2	0	50	50	100	3
5	22AML45	Java Programming	ETC		2	2	0	50	50	100	3
6	22AML46	Data Visualization using Tableau (Theory)	AEC		1	0	2	50	50	100	2
7	22AML47	AI Tools, Frameworks & its Application I			0	0	2	50	50	100	1
					Total			350	350	700	20

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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	22AML51	Engineering Economics & Management	HSMS	TD – AIML PSB-AIML	3	0	0	50	50	100	3
2	22AML52	Deep Learning Principles & Practices (Integrated)	IPC	TD – AIML PSB-AIML	3	0	2	50	50	100	4
3	22AML53	Big data Analytics	PC	TD – AIML PSB-AIML	4	0	0	50	50	100	4
4	22AMLL54	Big data Analytics LAB	PCL	TD – AIML PSB-AIML	0	0	2	50	50	100	1
5	22AML55X	Program Elective 1	PEC	TD – AIML PSB-AIML	3	0	0	50	50	100	3
6	22AML56	Mini Project	PROJ	TD – AIML PSB-AIML	0	0	4	100	---	100	2
7	22RMIK57	Research Methodology and IPR	AEC	TD – AIML PSB-HSS	2	2	0	50	50	100	3
8	22CIVK58	Environmental Studies	MC	TD – AIML PSB-CV	2	0	0	50	50	100	2
9	22NSK59	National Service Scheme (NSS)	MC	NSS coordinator	0	0	2	100	---	100	0
	22PEK59	Physical Education (PE) (Sports and Athletics)		Physical Education Director							
	22YOK59	Yoga		Yoga Teacher							
Total								500	300	800	22

Program Elective 1*

22AML55A	Full Stack Development	22AML55C	Foundation of Data Science
22AML55B	Microcontroller and Embedded System	22AML55D	Computer Networks

***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 content 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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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	22AML61	Cloud Computing	IPC	TD – AIML PSB-AIML	3	0	2	50	50	100	4
2	22AML62	Image Analytics with Computer Vision	PC	TD – AIML PSB-AIML	4	0	0	50	50	100	4
3	22AML63X	Program Elective 2	PEC	TD – AIML PSB-AIML	3	0	0	50	50	100	3
4	22AML64X	Open Elective 1	OEC	TD – AIML PSB-AIML	3	0	0	50	50	100	3
5	22AMLP65	Project Phase 1	PROJ	TD – AIML PSB-AIML	0	0	6	50	50	100	3
6	22AMLL66	Image Analytics with Computer Vision LAB	PCL	TD – AIML PSB-AIML	0	0	2	50	50	100	1
7	22AML67X	Ability Enhancement Course	AEC	TD – AIML PSB-AIML	0	0	2	50	50	100	1
8	22NSK68	National Service Scheme (NSS)	MC	NSS coordinator	0	0	2	100	---	100	0
	22PEK68	Physical Education (PE) (Sports and Athletics)		Physical Education Director							
	22YOK68	Yoga		Yoga Teacher							
9	22IKSK69	Indian Knowledge System	IKS	HSS	1	0	0	100	0	100	0
10	22UHV69	Universal Human Values	UHV	HSS	1	0	0	50	50	100	0
Total								500	300	800	19

Program Elective 2*

22AML63A	Parallel and Distributed computing	22AML63C	Artificial Intelligence in Block Chain
22AML63B	Intelligent Embedded System	22AML63D	Time Series Analysis

Open Elective 1 (Offered to other branch students)

22AML64A	Next-Gen Database Technology using MongoDB
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Ability Enhancement Course/Skill Enhancement Course

22AML67A	AI Tools, Frameworks & its Application II
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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	22AML71	Natural Language Processing/ To be Completed in 5 th /6 th Semester	IPC	TD – AIML PSB-AIML	3	0	2	50	50	100	4
2	22AML72	Quantum Computing/ To be Completed in 5 th /6 th Semester	IPC	TD – AIML PSB-AIML	3	0	2	50	50	100	4
3	22AML73	Business Intelligence/ To be Completed in 6 th Semester	PC	TD – AIML PSB-AIML	3	2	0	50	50	100	4
4	22AML74X	Program Elective 3 (Online Courses)	PEC	TD – AIML PSB-AIML	3	0	0	50	50	100	3
5	22AML75X	Open Elective 2 (Online Courses)	OEC	TD – AIML PSB-AIML	3	0	0	50	50	100	3
6	22AML76	Major Project Phase-II	Any Department	TD – AIML PSB-AIML	0	0	12	100	100	100	6
Total								400	300	700	24

Program Elective 3*

22AML74A	Datamining and Data warehousing	22AML74C	Human Computer Interaction
22AML74B	Introduction to Robotics	22AML74D	Data Security & Privacy
Open Elective 2 (Offered to other branch students)			
22AML75A	Business Intelligence	22AML75B	Soft Computing

***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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Global Academy of Technology

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



H.M. Rajarajeshwari
Dean Academic

VIII SEMESTER

Global Academy of Technology,
Rajarajeshwarinagar, Bengaluru - 560098

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	22AML81X	Program Elective 4 (Online Courses)	PEC	TD - AIML PSB-AIML	3	0	0	50	50	100	3
2	22AML82X	Open Elective (Online courses)	OEC	TD - AIML PSB-AIML	3	0	0	50	50	100	3
3	22AML83	Internship	INT	TD - AIML PSB-AIML	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 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 any financial assistance extended by the organization.

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

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