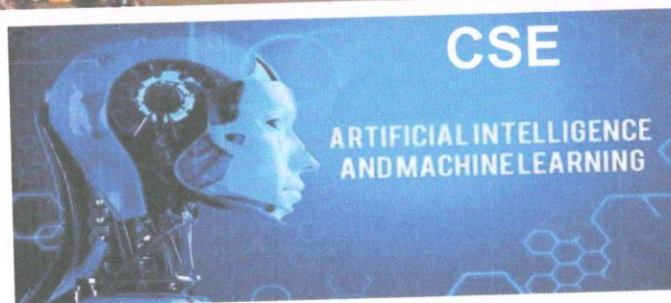




SCHEME



Department of Computer Science and
Engineering (AI&ML)

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Bangalore- 560 098.

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Rajarajeshwarinagar, Bengaluru-98.

2023 SCHEME

**Computer Science and Engineering
(AI&ML)**

III – VIII Semester

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.



(Effective from the academic year 2023-24)

Sl. No.	Course and Course Code		Course Title	Teaching Department (TD) and Question Paper Setting Board (PSB)	Teaching Hours/Week			Examination			CREDITS
					L	T	P	CIE	SEE	Total	
1	BS	MAT23301A	Discrete Mathematics and Graph Theory	MAT	2	2	0	50	50	100	3
2	PCC	CSE23302	Data Structures	TD:CI PSB: CSE	3	0	0	50	50	100	3
3	IPCC	CML23303	Fundamentals of Python Programming	TD:CI PSB: CI	3	0	2	50	50	100	4
4	PCC	CML23304	Operating Systems		3	0	0	50	50	100	3
5	ESC/ETC/PLC	CML23305X	ESC/ETC/PLC		2	0	2	50	50	100	3
6	UHV	SCK23306	Social Connect and Responsibility	Any department	0	0	2	100	---	100	1
7	AEC	CML23307X	Ability Enhancement Course -I (Theory)	TD:CI PSB: CI	2	0	0	50	50	100	2
			OR		OR						
			Ability Enhancement Course -I (Integrated)		1	0	2	50	50	100	2
8	MC	NSK23308	National Service Scheme (NSS)	NSS coordinator	0	0	2	100	---	100	0
		PEK23308	Physical Education (PE) (Sports and Athletics)	Physical Education Director							
		YOK23308	Yoga	Yoga Teacher							
9	PCCL	CSEL23309	Data Structures Laboratory	TD:CI PSB: CSE	0	0	2	50	50	100	1
					0	0	2	550	350	900	20

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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

Engineering Science Course (ESC/ETC/PLC)

CML23305A	Introduction to Web Technologies	
CML23305B	Data Analytics with R	

Ability Enhancement Course – I

CML23307A	Computer Organization and Architecture	
CML23307B	Ethics and Public Policy for AI	

Professional Core Course (IPCC): Refers to Professional Core Course Theory Integrated with practicals 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 may please be referred.

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.


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B.E. in Computer Science and Engineering(AI&ML) Scheme of Teaching and Examinations 2023

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

(Effective from the academic year 2023-24)



IV SEMESTER

Sl. No.	Course and Course Code		Course Title	Teaching Department (TD)and Question Paper Setting Board (PSB)	Teaching Hours/Week			Examination			CREDITS
					L	T	P	CIE	SEE	Total	
1	BS	MAT23401A	Probability and Linear Algebra	MAT	2	2	0	50	50	100	3
2	PCC	CSE23402	Design and Analysis of Algorithms	TD:CI PSB: CSE	3	0	0	50	50	100	3
3	IPCC	CML23403	Database Management Systems	TD:CI PSB: CI	3	0	2	50	50	100	4
4	PCC	CML23404	Software Engineering		3	0	0	50	50	100	3
5	ESC/ETC/ PLC	CML23405X	ESC/ETC/PLC		2	2	0	50	50	100	3
6	UHV	UHK23406	Universal Human Values	Any department	1	0	0	50	50	100	1
7	AEC	CML23407X	Ability Enhancement Course-II (Theory)	TD:CI PSB: CI	2	0	0	50	50	100	2
			OR								
			1		0	2	50	50	100		
8	MC	NSK23408	National Service Scheme (NSS)	NSS coordinator	0	0	2	100	---	100	0
		PEK23408	Physical Education (PE) (Sports and Athletics)	Physical Education Director							
		YOK23408	Yoga	Yoga Teacher							
9	PCCL	CSEL23409	Algorithms Laboratory	TD:CI PSB: CSE	0	0	2	50	50	100	1
								500	400	900	20

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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.

Engineering Science Course (ESC/ETC/PLC)

CML23405A	Unix System-Programming	CML23405C	Theory of Computation
CML23405B	Metric Spaces		

Ability Enhancement Course / Skill Enhancement Course – II

CML23407A	Advanced Python	CML23407C	Object Oriented Programming With C++
CML23407B	Object Oriented Programming With Java		

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 courses is mandatory for the award of degree.


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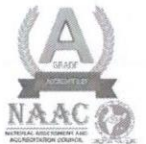


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(Effective from the academic year 2023-24)



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		
													L	
1	HSMS	CML23501	Management, Economics and Finance for IT Engineers	TD: CI PSB: CI	3	0	0		03	50	50	100	3	
2	IPCC	CML23502	Computer Networks	TD: CI PSB: CI	3	0	2		03	50	50	100	4	
3	PCC	CML23503	Fundamentals of Machine Learning	TD: CI PSB: CI	4	0	0		03	50	50	100	4	
4	PCCL	CMLL23504	Fundamentals of Machine Learning Laboratory	TD: CI PSB: CI	0	0	2		03	50	50	100	1	
5	PEC	CML23505X	Professional Elective – I	TD: CI PSB: CI	3	0	0		03	50	50	100	3	
6	PROJ	CMLP23506	Mini Project	TD: CI PSB: CI	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/Env/Chem 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		

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Professional Elective Course – I

CML23505A	Enterprise Java Programming	CML23505C	Fundamentals of Internet of Things
CML23505B	Cryptography & Network security	CML23505D	Data mining & Data warehousing

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.) 2023-23

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.

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B.E. in Computer Science and Engineering(AI&ML) Scheme of Teaching and Examinations 2023

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

(Effective from the academic year 2023-24)

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	CML23601	Cloud Computing	TD: CI PSB: CI	3	0	2		03	50	50	100	4
2	PCC	CML23602	Advanced Machine learning	TD: CI PSB: CI	4	0	0		03	50	50	100	4
3	PEC	CML23603X	Professional Elective – II	TD: CI PSB: CI	3	0	0		03	50	50	100	3
4	OEC	CML23604X	Open Elective -I	TD: PSB: Respective Department	3	0	0		03	50	50	100	3
5	PROJ	CMLP23605	Major Project Phase – I	TD: CI PSB: CI	0	0	4		03	100	--	100	2
6	PCCL	CMLL23606	Advanced Machine learning Laboratory	TD: CI PSB: CI	0	0	2		03	50	50	100	1
7	AEC/SDC	CML23607X	Ability Enhancement Course/ Skill Development Course – IV	TD: CI PSB: CI	0	0	2		01	50	50	100	1
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	PSB:HSS TD:CI	1	0	0		01	100	--	100	0
									Total	600	300	900	18
Professional Elective Course													
CML23603A		Server side Scripting											
		CML23603B											
		Networking And Data Analysis In Iot											

Professional Elective Course

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CML23603B	Fundamentals of Cyber security	CML23603D	Fundamentals of Data Science
Open Elective Course			
CML23604A	Chat GPT-AI Learning models	CML23604C	Introduction to Machine Learning
CML23604B	Scala Programming	CML23604D	Mobile Application Development
Ability Enhancement Course / Skill Enhancement Course – IV			
CML23607A	MongoDB		
CML23607B	Data Visualization		

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 al 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.) 2023-23

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.



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B.E. in Computer Science and Engineering(AI&ML) Scheme of Teaching and Examinations 2023

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

(Effective from the academic year 2023-24)

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	CML23701	Natural Language Processing	TD: CI PSB: CI	3	0	2			03	50	50	100	4
2	IPCC	CML23702	Deep Learning	TD: CI PSB: CI	3	0	2			03	50	50	100	4
3	PCC	CML23703	Computer vision and image processing	TD: CI PSB: CI	3	2	0			03	50	50	100	4
4	PEC	CML23704x	Professional Elective-III	TD: CI PSB: CI	3	0	0			03	50	50	100	3
5	OEC	CML23705x	Open Elective- II	TD: PSB: Respective Department	3	0	0			01	50	50	100	3
6	PROJ	CMLP23706	Major Project Phase-II	TD: CI PSB: CI	0	0	12			03	100	100	200	6
Total											350	350	700	24

Professional Elective Course

CML23704A	Framework for Application Deployment	CML23704C	Industrial IOT
CML23704B	Ethical Hacking	CML23704D	Business Intelligence & Analytics

Open Elective Course

CML23705A	R Programming	CML23705C	Fundamentals of IOT
CML23705B	Java Programming	CML23705D	Digital Image Processing

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

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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 (CMLP23706): 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.


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

(Effective from the academic year 2023-24)

Scheme A- VIII 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 Lectur	Tutorial	Practical / Drawing	Self-Study	Duration in hours	CIE Marks	SEE Marks	Total Marks	
1	PEC	CML23801x	Professional Elective -IV (Online Courses)	TD:CI PSB: CI	3	0	0		03	50	50	100	3
2	OEC	CML23802x	Open Elective - III (Online Courses)	TD: PSB: Respective Department	3	0	0		03	50	50	100	3
3	INT	CMLI23803	Internship (Industry/Research) (14 - 20 weeks)		0	0	12		03	100	100	200	10
Total									200	200	400	16	

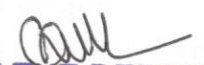
Professional Elective Course (Online courses)

CML23801A	Parametrized Algorithm	CML23801C	Large Language Models
CML23801B	Blockchain and its Applications	CML23801D	Social Network Analysis

Open Elective Courses (Online Courses)

CML23802A	Cyber Security and Privacy	CML23802C	Natural Language Processing
CML23802B	Computer Vision	CML23802D	Responsible and Safe AI systems

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


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 Dept. of Computer Science & Engineering (AI & ML)
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 Bangalore- 560 098.


Dean Academic
 Global Academy of Technology,
 Rajarajeshwarinagar, Bengaluru-93

Note: VII and VIII semesters of IV years of the programSwapping 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.

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B.E. in Computer Science and Engineering(AI&ML) 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 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	CML23701	Natural Language Processing (To be completed in 5 th /6 th semester)	TD:CI PSB: CI	3	0	2			03	50	50	100	4
2	IPCC	CML23702	Deep Learning (To be completed in 5 th /6 th semester)	TD:CI PSB: CI	3	0	2			03	50	50	100	4
3	PCC	CML23703	Computer vision and image processing (To be completed in 5 th /6 th semester)	TD:CI PSB: CI	3	2	0			03	50	50	100	4
4	PEC	CML23704x	Professional Elective-III (To be completed in 5 th /6 th semester)	TD:CI PSB: CI	3	0	0			03	50	50	100	3
5	OEC	CML23705x	Open Elective- II (To be completed in 5 th /6 th semester)	TD: PSB: Respective Department	3	0	0			01	50	50	100	3
6	PROJ	CMLP23706	Major Project Phase-II	TD:CI PSB: CI	0	0	12			03	100	100	200	6
Total											350	350	700	24

Professional Elective Course

CML23704A	Framework for Application Deployment	CML23704C	Industrial IOT
CML23704B	Ethical Hacking	CML23704D	Business Intelligence & Analytics

Open Elective Course

CML23705A	R Programming	CML23705C	Fundamentals of IOT
CML23705B	Java Programming	CML23705D	Digital Image Processing

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

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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 (CMLP23706): The objective of the Project work is

(ix) To encourage independent learning and the innovative attitude of the students.

(x) To develop interactive attitude, communication skills, organization, time management, and presentation skills.

(xi) To impart flexibility and adaptability.

(xii) To inspire team working.

(xiii) To expand intellectual capacity, credibility, judgment and intuition.

(xiv) To adhere to punctuality, setting and meeting deadlines.

(xv) To install responsibilities to oneself and others.

(xvi) 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.

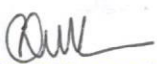
CIE procedure for Project Work:

(3) 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.

(4) 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.


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					L	T	P	S					
1	PEC	CML23801x	Professional Elective -IV (Online Courses)	TD:CI PSB: CI	3	0	0		03	50	50	100	3
2	OEC	CML23802x	Open Elective - III (Online Courses)	TD: PSB: Respective Department	3	0	0		03	50	50	100	3
3	INT	CMLI23803	Internship (Industry/Research) (14 - 20 weeks)		0	0	12		03	100	100	200	10
Total										200	200	400	16

Professional Elective Course (Online courses)

CML23801A	Parametrized Algorithm	CML23801C	Large Language Models
CML23801B	Blockchain and its Applications	CML23801D	Social Network Analysis

Open Elective Courses (Online Courses)

CML23802A	Cyber Security and Privacy	CML23802C	Natural Language Processing
CML23802B	Computer Vision	CML23802D	Responsible and Safe AI systems

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