



Global Academy of Technology

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

B.E. in Mechanical Engineering Scheme of Teaching and Examinations 2023

Outcome Based Education (OBE) and Choice Based Credit

System (CBCS)

(Effective from the academic year 2023-24)



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	Self -Study	Duration in hours	CIE Marks	SEE Marks	Total Marks		
					L	T	P	S						
1	BSC	MAT23301C	Complex Variables and Probability	TD - MAT PSB - MAT	2	2	0		03	50	50	100	3	
2	IPCC	MED23302	Material Science and Engineering	TD - ME PSB - ME	3	0	2		03	50	50	100	4	
3	IPCC	MED23303	Manufacturing Process		3	0	2		03	50	50	100	4	
4	PCC	MED23304	Mechanics of Materials		2	2	0		03	50	50	100	3	
5	ESC	MED23305X	ESC/ETC/PLC	TD & PSB – Respective Dept.	3	0	0		03	50	50	100	3	
6	MC	SCK23306	Social Connect and Responsibility	Any Department	0	0	2		01	100	---	100	1	
7	AEC	MED23307X	Ability Enhancement Course/ Skill Enhancement Course - I	TD & PSB: Concerned Department	2	0	0		01	50	50	100	2	
			OR											
			Ability Enhancement Course/ Skill Enhancement Course – I	TD & PSB: Concerned Department	1	0	2		02					
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										
Total									500	300	800	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.

Engineering Science Course (ESC/ETC/PLC)

MED23305A	Computer Aided Modelling [2-0-2]	MED23305C	Waste handling and Management [3-0-0]
MED23305B	Internet of Things [3-0-0]	MED23305D	Automation in Manufacturing

Ability Enhancement Course/ Skill Enhancement Course - III

MED23307A	Advanced Python Programming [1-0-2]	MED23307C	Spreadsheet for Engineers [1-0-2]
MED23307B	Fundamentals of Additive Manufacturing [1-0-2]	MED23307D	Tools in Scientific Computing [1-0-2]

Professional Core Course (IPCC): Refers to Professional Core Course Theory Integrated with practical's 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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IV SEMESTER

Sl. No.	Course	Course Code	Course Title	Teaching Department (TD)and Question Paper Setting Board (PSB)	Teaching Hours/Week				Examination				CREDITS
					TheoryLecture	Tutorial	Practical/ Drawing	Self -Study	Duration in hours	CIE Marks	SEE Marks	Total Marks	
1	BSC	MAT23401C	Transforms Calculus and Numerical Techniques	TD – MAT, PSB - MAT	2	2	0		03	50	50	100	3
2	IPCC	MED23402	Mechanical Measurements & Metrology	TD - ME PSB - ME	3	0	2		03	50	50	100	4
3	PCC	MED23403	Thermodynamics		3	2	0		03	50	50	100	4
4	PCC	MED23404	Theory of Machines		2	2	0		03	50	50	100	3
5	ESC	MED23405X	ESC/ETC/PLC	TD & PSB – Respective Dept.	3	0	0		03	50	50	100	3
6	UHV	UHK23406	Universal human values course	Any Department	1	0	0		01	50	50	100	1
7	AEC	MED23407X	Ability Enhancement Course/Skill Enhancement Course- II	TD & PSB: Concerned Department	1	0	0		01	50	50	100	1
			OR										
			Ability Enhancement Course/Skill Enhancement Course- II	TD & PSB: Concerned Department	0	0	2		02				
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	MEDL23409	Machine Shop	TD – ME, PSB - ME	0	0	2		03	50	50	100	1
Total									500	400	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.

Engineering Science Course (ESC/ETC/PLC)

MED23405A	Non-Traditional Machining	MED23405C	Micro Electromechanical Systems
MED23405B	Mechatronics	MED23405D	Energy Engineering

Ability Enhancement Course/Skill Enhancement Course- II

MED23407A	Introduction to AI & ML	MED23407C	Geometric Dimensioning & Tolerancing
MED23407B	Digital Marketing	MED23407D	Introduction in Programming in C++

Professional Core Course (IPCC): Refers to Professional Core Course Theory Integrated with practical's 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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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	MED23501	Industrial Management & Economics	TD: MEPSB:ME	3	0	0		03	50	50	100	3
2	IPCC	MED23502	Fluid Mechanics Machinery	TD:ME PSB:ME	2	2	2		03	50	50	100	4
3	PCC	MED23503	Machine Design	TD: ME PSB:ME	3	2	0		03	50	50	100	4
4	PCCL	MEDL23504	CNC Programming Laboratory	TD: ME PSB:ME	0	0	2		03	50	50	100	1
5	PEC	MED23505X	Professional Elective - I	TD: ME PSB:ME	3	0	0		03	50	50	100	3
6	PROJ	MEDP23506	Mini Project	TD: ME PSB:ME	0	0	4		03	100	-	100	2
7	AEC	RMIK23507	Research Methodology and IPR	Any Department	3	0	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	

Professional Elective Course - I

MED23505A	Control Engineering	MED23505C	Supply chain management & Introduction to SAP
MED23505B	Product Life Cycle Management	MED23505D	Operations Research

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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.



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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	PCC	MED23601	Finite Element Methods	TD: ME PSB:ME	3	2	0		03	50	50	100	4
2	IPCC	MED23602	Heat Transfer	TD: ME PSB:ME	3	0	2		03	50	50	100	4
3	PEC	MED23603X	Professional Elective - II	TD: ME PSB:ME	3	0	0		03	50	50	100	3
4	OEC	MED23604X	Open Elective -I	TD: ME PSB:ME	3	0	0		03	50	50	100	3
5	PROJ	MEDP23605	Major Project Phase - I	TD: ME PSB:ME	0	0	4		03	100	--	100	2
6	PCCL	MEDL23606	Analysis Laboratory	TD: ME PSB:ME	0	0	2		03	50	50	100	1
7	AEC/ SDC	MED23607X	Ability Enhancement Course/ SkillDevelopment 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	

Professional Elective Course- II			
MED23603A	Design of Transmission Elements	MED23603C	Project and Operations Management
MED23603B	Refrigeration and Air Conditioning	MED23603D	Renewable Energy Technologies
Open Elective Course - I			
MED23604A	Supply Chain Management	MED23604C	Total Quality Management
MED23604B	Renewable Energy Power plants	MED23604D	Modern Mobility
Ability Enhancement Course / Skill Enhancement Course - III			
MED23607A	Basics of MATLAB	MED23607C	Introduction Augmented Reality
MED23607B	Fundamental of Virtual Reality ARP Development	MED23607D	Simulation and Analysis using Ansys workbench
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.) 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.			



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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	PCC	MED23701	Industrial Robotics	TD: ME, PSB:ME	3	2	0		03	50	50	100	4
2	IPCC	MED23702	Hydraulics and Pneumatics	TD: ME, PSB:ME	3	0	2		03	50	50	100	4
3	IPCC	MED23703	Mechanical Vibrations	TD: ME, PSB:ME	3	0	2		03	50	50	100	4
4	PEC	MED23704x	Professional Elective-III	TD: ME PSB:ME	3	0	0		03	50	50	100	3
5	OEC	MED23705x	Open Elective- II	TD: ME PSB:ME	3	0	0		01	50	50	100	3
6	PROJ	MEDP23706	Major Project Phase-II		0	0	12		03	100	100	200	6
Total										350	350	700	24

Professional Elective Course

MED23704A	Design for Manufacturing and Assembly	MED23704C	Total Quality Management
MED23704B	Thermal Management of Electronic Equipment	MED23704D	Automotive Engineering & Hybrid Vehicle Technology

Open Elective Course

MED23705A	Additive Manufacturing	MED23705C	Operations Research
MED23705B	Project and Operations Management	MED23705D	Strategies for Sustainable Design

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 (21MEP75): 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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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 Lecture	Tutorial	Practical/ Drawing	Self-Study	Duration in hours	CIE Marks	SEE Marks	Total Marks	
					L	T	P	S					
1	PEC	MED23801x	Professional Elective -IV (Online Courses)	TD: ME PSB:ME	3	0	0		03	50	50	100	3
2	OEC	MED23802x	Open Elective - III (Online Courses)	TD: ME PSB:ME	3	0	0		03	50	50	100	3
3	INT	MEDI23803	Internship (Industry/Research) (14 - 20 weeks)	TD: ME	0	0	12		03	100	100	200	10
Total									200	200	400	16	

Professional Elective Course (Online courses)

MED23801A	Quality Design & Control (Available in NPTEL) https://onlinecourses.nptel.ac.in/noc21_mg24/preview	MED23801C	Machinery Fault Diagnosis and Signal Processing (Available in NPTEL) https://onlinecourses.nptel.ac.in/noc22_me60/preview
MED23801B	Product Design and Manufacturing (Available in NPTEL) https://onlinecourses.nptel.ac.in/noc21_me66/preview	MED23801D	Computer Integrated Manufacturing (Available in NPTEL) https://onlinecourses.nptel.ac.in/noc22_me10/preview

Open Elective Courses (Online Courses)

MED23802A	Fundamentals of automotive systems (Available in NPTEL) https://archive.nptel.ac.in/courses/107/106/107106088/	MED23802C	Strategies for Sustainable Design (Available in NPTEL) https://onlinecourses.nptel.ac.in/noc21_de07/preview
MED23802B	Industrial Safety Engineering (Available in NPTEL) https://onlinecourses.nptel.ac.in/noc20_mg43/preview	MED23802D	Business Planning & Project Management (Available in NPTEL) https://onlinecourses.swayam2.ac.in/cec21_ge06/preview

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 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.



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B.E. in Mechanical Engineering Scheme of Teaching and Examinations 2023

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(Effective from the academic year 2023-24)



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	
					L	T	P	S					
1	PCC	MED23601	Finite Element Methods	TD: ME PSB:ME	3	2	0		03	50	50	100	4
2	IPCC	MED23602	Heat Transfer	TD: ME PSB:ME	3	0	2		03	50	50	100	4
3	PEC	MED23603X	Professional Elective Course	TD: ME PSB: ME	3	0	0		03	50	50	100	3
4	OEC	MED23604X	Open Elective Course	TD: ME PSB: ME	3	0	0		03	50	50	100	3
5	PCCL	MEDL23606	Analysis Laboratory	TD: ME PSB: ME	0	0	2		01	50	50	100	1
6	AEC	MED23607X	Ability Enhancement Course/Skill Development Course V	TD: ME PSB:ME	If the course is offered as a Theory				03	50	50	100	1
					1	0	0						
					If course is offered as a practical								
					0	0	2						
7	MC	NSK23608	National Service Scheme (NSS)	NSS coordinator	0	0	2		03	100	-	100	0
		PEK23608	Physical Education (PE) (Sports and Athletics)	Physical Education Director					03				
		YOK23608	Yoga	Yoga Teacher					01				
8	IKS	IKSK23609	Indian Knowledge System	Any Department	1	0	0		03	100	0	100	0
Total									500	300	800	16	



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(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	
					L	T	P	S					
1	PCC	MED23701	Industrial Robotics To be completed in 5th/6th semester	TD: ME PSB:ME	3	0	0		03	50	50	100	3
2	IPCC	MED23702	Hydraulics and Pneumatics To be completed in 5th /6th semester	TD: ME PSB:ME	3	0	2		03	50	50	100	4
3	IPCC	MED23703	Mechanical Vibrations To be completed in the 6 th semester	TD: ME PSB: ME	3	0	2		03	50	50	100	4
4	PEC	MED23704x	Professional Elective Course (MOOC Courses)	TD: ME PSB: ME	3	0	0		03	50	50	100	3
5	OEC	MED23705x	Open Elective Courses (MOOC courses)	TD: ME PSB: ME	3	0	0		01	50	50	100	3
1	PEC	MED23801x	Professional Elective -IV (Online Courses)	TD: ME PSB:ME	3	0	0		03	50	50	100	3
2	OEC	MED23802x	Open Elective - III (Online Courses)	TD: ME PSB:ME	3	0	0		01	50	50	100	3
3	PROJ	MED23803	Project – Outcome of Training	TD: ME PSB:ME	0	0	12		03	100	100	200	9
4	INT	MED23804	Internship (Industry/Research) (02 semesters)	TD: ME	0	0	12		03	100	100	200	10
Total									550	550	1100	42	