



III - VIII Semester Scheme (2021) Department of **MECHANICAL ENGINEERING**

SCHEME



Department of
MECHANICAL ENGINEERING

GLOBAL ACADEMY OF TECHNOLOGY

(Autonomous institution affiliated to VTU,
Belagavi.

Accredited by NAAC with 'A' grade,
NBA Accredited CS, E&C, E&E, MECH and IS
branches)

**IDEAL HOMES TOWNSHIP,
RAJA RAJESHWARI NAGAR,
BENGALURU - 560098**

Global Academy of Technology – An Overview

(Autonomous Institution under Visvesvaraya Technological University, Belagavi)

Vision of the Institute:

Become a premier institution imparting quality education in engineering and management to meet the changing needs of society.

Mission of the Institute:

- ❖ Create environment conducive for continuous learning through quality teaching and learning processes supported by modern infrastructure.
- ❖ Promote Research and Innovation through collaboration with industries.
- ❖ Inculcate ethical values and environmental consciousness through holistic education programs.

Objectives:

With a very firm resolve, Global Academy of Technology is continuously investing untiring efforts to enable students to:

- ❖ Develop careers in Government and Private engineering organizations and other professionally related domains.
- ❖ Pursue higher studies and research to develop innovative solutions and technologies in engineering and other multi-disciplinary areas.
- ❖ Improve professional and personal traits oriented towards professional ethics and environmental compulsions.
- ❖ Inculcate professional leadership and successful entrepreneurship qualities.
- ❖ Help society in raising the quality of life.

Quality Policies:

- a. Providing Excellent Education Through High Quality, Experienced and Committed Faculty.
- b. Evolving creative processes for optimal Knowledge and Skill Transfer.
- c. Building up state-of-the-art infrastructure at par with international standards.
- d. Creating an environment for holistic personality development and develop research temperament.

HALLMARKS OF GLOBAL ACADEMY OF TECHNOLOGY:

- ❖ Proactive management determined to build the institute as a Centre of Excellence in engineering education.
- ❖ Qualified and dedicated faculty in all the departments.
- ❖ State of the art Infrastructure and up to date laboratory and Library facilities.
- ❖ Lush green campus with an environment of tranquillity and harmony.
- ❖ Student centric teaching-learning processes banking on Outcome Based Education; students friendly learning atmosphere.
- ❖ Emphasis on Project based learning throughout the course.

- ❖ Strong Industry-Institute interface with more than twenty Memorandum of Understanding (MOUs) signed with leading industries and institutions of repute.
- ❖ Indian Institute of Information Technology (IIIT), Allahabad, has signed a MOU for providing internships to students of GAT, research assistance to faculty, and conducting Faculty Development Programs in key areas of IT - Big Data, Cloud Computing, Artificial Intelligence, and Machine Learning.
- ❖ Mahatma Gandhi University, Kottayam, has signed a MOU to facilitate research in Nano Technology and provide research assistance to faculty of GAT.
- ❖ Industrial consultancy undertaken in many departments.
- ❖ Excellent Placement with more than 80% of the eligible students placed in leading IT companies, core industries and Start-up companies.
- ❖ Holistic and integrated training modules covering communication skills, leadership skills, soft skills and technical skills through professional trainers.
- ❖ On campus and off campus internship facilities.
- ❖ Robust parent connects and Student counselling system.
- ❖ In-house technical skill training programs/add on courses to enhance the employability of the students.
- ❖ Strong and growing alumni connect in place.
- ❖ Exclusive Research and Development, Industry–Institute Interaction Cell and Teaching and Learning Centre in place.
- ❖ Rainwater harvesting facility in the campus.

The following academic processes are implemented on a regular basis to sustain a meaningful and proactive teaching-learning environment:

- ❖ Emphasis on **continuous revision of the curriculum**, based on feedback from the students and input from industry, alumni, and other stakeholders.
- ❖ Conduction of regular **training programme** for faculty, technical & supporting staff.
- ❖ Conduction of Academic Audit of each department on an annual basis.
- ❖ Under **open electives** students have the options to study subjects offered by other departments to augment their interdisciplinary knowledge.
- ❖ Students have to do **value added courses**, mandatory courses, certificate courses, and become members of professional bodies, etc.
- ❖ Advanced and enrichment courses are offered as Electives during the final year UG and PG Degree Programmes.
- ❖ **Self-Learning** is encouraged in students through MOOCs, NPTEL/SWAYAM, Coursera, Edex etc. Credit shall be awarded to students for completion of such courses.

Department of Mechanical Engineering

(Accredited by National Board of Accreditation, New Delhi)

Vision of the Department:

Become one of the leading providers of education in mechanical engineering with emphasis on research, development, and innovation for the benefit of society.

Mission of the Department:

- Impart quality technical education in the field of mechanical engineering through excellent teaching-learning process, modern infrastructure and computing tools
- Prepare students for successful careers by providing placements and encouraging research, development and innovation through industry-institute interaction
- Instil professional ethics and environmental consciousness amongst students through inclusive development programs

About the Department:

Mechanical Engineering is one of the broadest and the most versatile engineering profession finding its application in all fields of technology. The boost in the manufacturing sector has raised the demand for Mechanical Engineers exponentially. The uniqueness of the discipline incorporates skills and expertise in the areas of Design, Manufacturing, Mechanics and Thermal sciences besides inter-disciplinary subjects that are essential to most sectors of industry.

The department is achieving its milestones at various stages of its growth by upgrading the course-curriculum for catering the needs of industry and research, by developing and maintaining state-of-art laboratories CNC Technology, 3D Printing and Automation.

The department conducts various training programs in collaboration with renowned industrial organizations such as Toyota, AMS-India, TATA Electronics Pvt. Ltd, EMI Product, Askar Microns, etc.

Our student teams have developed Formula Car, Go Kart and Solar Powered Vehicle and participated in racing competitions, won prizes, and have brought laurels to our department and to the college.

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Scheme of UG Autonomous Program – 2021 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	21MAT31C	Complex Variables & Probability	BS	MAT	2	2	0	50	50	100	3
2	21MED32	Strength of Materials (integrated)	IPC	Respective Department	3	0	2	50	50	100	4
3	21MED33	Manufacturing Process (Integrated)	IPC		3	0	2	50	50	100	4
4	21MED34	Thermodynamics	PC		2	2	0	50	50	100	3
5	21MED35	Material Science and Metallurgy	PC		3	0	0	50	50	100	3
6	21KSK36/46	Sanskrutika Kannada	HSM	Any Department	1	0	0	50	50	100	1
	21KBK36/46	Balake Kannada									
	OR										
	21CPH36/46	Constitution of India and Professional Ethics									
7	21MED37	Ability Enhancement Course – I : Modelling & 3D Printing	PC	Respective Department	0	0	2	50	50	100	1
Total								350	350	700	19
8	21MATDIP31	Additional Mathematics (For Lateral Entry Students)	BS	MAT	2	2	0	100	--	100	0

IV SEMESTER

Sl. No.	Course Code	Course Title	Course Type	Teaching Dept.	Teaching Hours/Week			Examination			CREDITS
					L	T	P	CIE	SEE	Total	
1	21MAT41C	Transforms Calculus and Numerical Techniques	BS	MAT	2	2	0	50	50	100	3
2	21MED42	Mechanical Measurements & Metrology (Integrated)	IPC	Respective Department	3	0	2	50	50	100	4
3	21MED43	Mechatronics	PC		3	0	0	50	50	100	3
4	21MED44	Theory of Machines	PC		2	2	0	50	50	100	3
5	21MED45	Computer Aided Modelling	PC		2	0	2	50	50	100	3
6	21KSK36/46	Samskrutika Kannada	HSM	Any Department	1	0	0	50	50	100	1
	21KBK36/46	Balake Kannada									
	OR										
	21CPH36/46	Constitution of India and Professional Ethics									
7	21MED47	Ability Enhancement Course – II: Automotive Engines, GD&T.	PC	Respective Department	0	0	2	50	50	100	1
8	21INT48	Inter/Intra Institutional Internship	INT	Respective Department	0	0	3	100	-	100	2
9	21MEDL49	Machine Shop	PC	Respective Department	0	0	1	50	50	100	1
Total					450			350	800	21	

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V SEMESTER

Sl. No.	Course Code	Course Title	Course Type	Teaching Dept.	Teaching Hours/Week			Examination			CREDITS
					L	T	P	CIE	SEE	Total	
1	21MED51	Management & Economics	PC	Respective Department	3	0	0	50	50	100	3
2	21MED52	Fluid Mechanics & Machinery (Integrated)	IPC		3	0	2	50	50	100	4
3	21MED53	Design of Machine Elements	PC		2	2	0	50	50	100	3
4	21MED54X	Program Elective 1	PEC		3	0	0	50	50	100	3
5	21MED55	Research Methodology	AEC		3	0	0	50	50	100	3
6	21MED56	Ability Enhancement Course - III: Automation Through Hydraulics & Pneumatics.	AEC		0	0	2	50	50	100	1
7	21CIV57/67	Environmental Science	HSM	Civil	1	0	0	50	50	100	1
	OR										
	21UHV57/67	Universal Human Values	HSM	Any Department							
8	21MEDL58	Fuel and Engine Testing Laboratory	PC	Respective Department	0	0	2	50	50	100	1
TOTAL								400	400	800	19

VI SEMESTER

Sl. No.	Course Code	Course Title	Course Type	Teaching Dept.	Teaching Hours/Week			Examination			CREDITS
					L	T	P	CIE	SEE	Total	
1	21MED61	Industrial Robotics	PC	Respective Department	3	0	0	50	50	100	3
2	21MED62	Heat Transfer (Integrated)	IPC		3	0	2	50	50	100	4
3	21MED63	Finite Element Methods (Integrated)	IPC		3	0	2	50	50	100	4
4	21MED64X	Program Elective 2	PEC		3	0	0	50	50	100	3
5	21MED65X	Open Elective 1	OEC	Respective Offering Department	3	0	0	50	50	100	3
6	21MED66	Ability Enhancement Course – IV: CNC Technology.	AEC	Respective Department	0	0	2	50	50	100	1
7	21CIV57/67	Environmental Science	HSM	Civil	1	0	0	50	50	100	1
	OR										
	21UHV57/67	Universal Human Values	HSM	Any Department							
8	21MEDP68	Mini Project	MP	Respective Department	Two Contact hours per week			50	50	100	2
TOTAL								400	400	800	21

Program Elective & Open Elective

Program Elective - 1		
Sl. No.	Course Code	Course Title
1	21MED541	Design for Manufacturing & Assembly
2	21MED542	Energy, Environment and Sustainable Development
3	21MED543	Additive Manufacturing
4	21MED544	Product Life Cycle Management
Program Elective - 2		
Sl. No.	Course Code	Course Title
1	21MED641	Mechanical Vibrations & Condition Monitoring
2	21MED642	Automotive Engineering and Hybrid Vehicle Technology
3	21MED643	Design of Transmission Elements
4	21MED644	Data Analytics

Open Elective - 1		
Sl. No.	Course Code	Course Title
1	21MED651	Project & Operations Management
2	21MED652	Quantitative Techniques

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VII SEMESTER

Sl. No.	Course Code	Course Title	Course Type	Teaching Dept.	Teaching Hours/Week			Examination			CREDITS
					L	T	P	CIE	SEE	Total	
1	21MED71	Project & Operations Management	PC	Respective Department	3	0	0	50	50	100	3
2	21MED72	Advanced Manufacturing Systems (Integrated)	IPC		3	0	2	50	50	100	4
3	21MED73	Smart Materials & MEMS	PC		3	0	0	50	50	100	3
4	21MED74X	Program Elective 3	PEC		3	0	0	50	50	100	3
5	21MED75X	Open Elective 2	OEC	Respective Offering Department	3	0	0	50	50	100	3
6	21MED76	Project Phase I	MP	Two Contact hours per week				100	-	100	2
7	21MEDL77	Design & Simulation Laboratory	PC	Respective Department	0	0	2	50	50	100	1
TOTAL								400	300	700	19

VIII SEMESTER

Sl. No.	Course Code	Course Title	Course Type	Teaching Dept.	Teaching Hours/Week			Examination			CREDITS
					L	T	P	CIE	SEE	Total	
1	21MED81X	Program Elective 4	PEC	Respective Department	3	0	0	50	50	100	3
2	21MED82X	Program Elective 5	PEC		3	0	0	50	50	100	3
3	21MED83	Project work phase – II	MP	Two Contact hours per week				100	100	200	12
4	21MED84	Technical Seminar	MP	One Contact hours per week				100	--	100	1
5	21MED85	Internship	INT	Completed during the intervening period of VI and VII Semester				50	50	100	2
TOTAL								350	250	600	21

Program Elective & Open Elective

Program Elective - 3		
Sl. No.	Course Code	Course Title
1	21MED741	Control Engineering
2	21MED742	Refrigeration & Air Conditioning
3	21MED743	Composite Material Technology
4	21MED744	Total Quality Management
Program Elective - 4		
Sl. No.	Course Code	Course Title
1	21MED811	Renewable Energy Technologies
2	21MED812	Thermal Management of Electronic Equipment's
3	21MED813	Operations Research
4	21MED814	Supply Chain Management
Program Elective - 5		
Sl. No.	Course Code	Course Title
1	21MED821	Tribology
2	21MED822	Computational Fluid Dynamics
3	21MED823	Industry 4.0
4	21MED824	Non-Traditional Machining

Open Elective - 2		
Sl. No.	Course Code	Course Title
1	21MED751	Additive Manufacturing
2	21MED752	Supply Chain Management