



**Maharaja Education Trust (R), Mysuru**  
**MAHARAJA INSTITUTE OF TECHNOLOGY MYSORE**  
 An Autonomous Institute affiliated to Visvesvaraya Technological University, Belagavi  
 Belawadi, Srirangapatna Taluk, Mandya – 571 477



Approved by AICTE, New Delhi | Recognized by Govt. of Karnataka

Ref: MITM/EC/Scheme/2023-24/002

**Scheme of Teaching and Examination for Master of Technology (Autonomous Scheme-2023)**

**Master of Technology (M.Tech) – Signal Processing**

(Effective from the Academic Year 2023-24)

**I-Semester - Signal Processing**

Sl. No	Course	Course Code	Course Title	Teaching Hours per Week			Examination				Credits
				Theory	Practical/ Seminar	Tutorial/Skill Development Activities	Duration in Hours	CIE Marks	SEE Marks	Total Marks	
				L	P	T/SDA					
1.	BS	M23MSP101	Advanced Engineering Mathematics	03	00	00	03	50	50	100	3
2.	IPC	M23MSP102	Advanced Digital Signal Processing	03	02	00	03	50	50	100	4
3.	PC	M23MSP103	Pattern recognition and Machine Learning	03	00	02	03	50	50	100	4
4.	PE	M23MSP104X	Professional Elective 1	02	00	02	03	50	50	100	3
5.	PE	M23MSP105X	Professional Elective 2	02	00	02	03	50	50	100	3
6.	MC	M23MSP106	Research Methodology and IPR	03	00	00	03	50	50	100	3
7.	PCL	M23MSPL107	Advanced Digital Signal Processing Lab	01	02	00	03	50	50	100	2
8.	AUD/ AE	M23MSP108	BOS recommended ONLINE Courses	Classes and evaluation procedures are as per the policy of the online course providers							PP
<b>Total</b>				<b>17</b>	<b>04</b>	<b>06</b>	<b>21</b>	<b>350</b>	<b>350</b>	<b>700</b>	<b>22</b>

**Note:** BSC-Basic Science Courses, PCC: Professional core, PCL: Professional Core Laboratory, IPCC-Integrated Professional Core Courses, MCC- Mandatory Credit Course, AUD/AEC –Audit Course / Ability Enhancement Course (A pass in AUD/AEC is mandatory for the award of the degree), PCCL-Professional Core Course lab, L-Lecture, P-Practical, T/SDA-Tutorial / Skill Development Activities (Hours are for Interaction between faculty and students)



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**Integrated Professional Core Course (IPCC):** Integrated Professional Core Course (IPCC): Refers to Professional Theory Core Course Integrated with practical of the same course. 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.

**Audit Courses /Ability Enhancement Courses Suggested by BOS (ONLINE courses):** Audit Courses: These are prerequisite courses suggested by the concerned Board of Studies. Ability Enhancement Courses will be suggested by the BoS if prerequisite courses are not required for the programs.

**Ability Enhancement Courses:**

- a) These courses are prescribed to help students to enhance their skills in fields connected to the field of specialization as well allied fields that leads to employable skills. Involving in learning such courses are impetus to lifelong learning.
- b) The courses under this category are online courses published in advance and approved by the concerned Board of Studies.
- c) Registration to Audit /Ability Enhancement Course shall be done in consultation with the mentor and is compulsory during the concerned semester.
- d) In case a candidate fails to appear for the proctored examination or fails to pass the selected online course, he/she can register and appear for the same course if offered during the next session or register for a new course offered during that session, in consultation with the mentor.
- e) The Audit Ability Enhancement Course carries no credit and is not counted for vertical progression. However, a pass in such a course is mandatory for the award of the degree.

**Skill development activities:** Under Skill development activities in a concerning course, the students should

1. Interact with industry (small, medium, and large).
2. Involve in research/testing/projects to understand their problems and help creative and innovative methods to solve the problem.
3. Involve in case studies and field visits/ fieldwork.
4. Accustomed to the use of standards/codes etc., to narrow the gap between academia and industry.
5. Handle advanced instruments to enhance technical talent.
6. Gain confidence in modeling of systems and algorithms for transient and steady-state operations, thermal study, etc.
7. Work on different software/s (tools) to simulate, analyze and authenticate the output to interpret and conclude.

All activities should enhance student's abilities to employment and/or self-employment opportunities, management skills, Statistical analysis, fiscal expertise, etc.



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Students and the course instructor/s to involve either individually or in groups to interact together to enhance the learning and application skills of the study they have undertaken. The students with the help of the course teacher can take up relevant technical –activities which will enhance their skill. The prepared report shall be evaluated for CIE marks.

Professional Elective 1		Professional Elective 2	
Course Code (M23MSP104X)	Course Title	Course Code (M23MSP105X)	Course Title
M23MSP104A	Application Specific Integrated Circuit Design	M23MSP105A	Digital VLSI Design
M23MSP104B	Biomedical Signal Processing	M23MSP105B	Multi rate Systems and Filter Banks
M23MSP104C	Speech and Audio Processing	M23MSP105C	Micro Electro Mechanical Systems
M23MSP104D	Advanced Embedded system	M23MSP105D	Reconfigurable Computing
M23MSP104E	Wireless Sensor Networks	M23MSP105E	Detection and Estimation



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Scheme of Teaching and Examination – 2023

Master of Technology (M.Tech) – **Signal Processing**

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

II Semester

Sl. No	Course	Course Code	Course Title	Teaching Hours per Week			Examination				Credits
				Theory	Practical/ Seminar	Tutorial/Skill Development Activities	Duration in Hours	CIE Marks	SEE Marks	Total Marks	
				L	P	T/SDA					
1.	PC	M23MSP201	Digital Compression	02	00	02	03	50	50	100	3
2.	IPC	M23MSP202	Image Processing and Machine Vision	03	02	00	03	50	50	100	4
3.	PE	M23MSP203X	Professional Elective 3	02	00	02	03	50	50	100	3
4.	PE	M23MSP204X	Professional Elective 4	02	00	02	03	50	50	100	3
5.	MPS	M23MSP205	Mini Project	00	04	02	03	50	50	100	3
6.	PCL	M23MSPL206	Image Processing Laboratory	01	02	00	03	50	50	100	3
7.	AUD/ AE	M23AUD207 / M23AE207	Suggested ONLINE Courses	Classes and evaluation procedures are as per the policy of the online course providers							PP
<b>Total</b>				<b>10</b>	<b>08</b>	<b>08</b>	<b>15</b>	<b>350</b>	<b>250</b>	<b>600</b>	<b>19</b>

**Note:** PCC: Professional core courses, PEC: Professional Elective Courses, IPCC-Integrated Professional Core Courses. MPS-Mini Project with Seminar; AUD/AEC; Audit Courses / Ability Enhancement Courses (Mandatory), PCL-Professional Core Course lab, L-Lecture, P-Practical, T/SDA-Tutorial / Skill Development Activities(Hours are for Interaction between faculty and students)

**Note:**



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1) **Mini Project with Seminar:** This may be hands-on practice, survey report, data collection and analysis, coding, mobile app development, field visit and report preparation, modelling of system, simulation, analysing and authenticating, case studies, etc.

CIE marks shall be awarded by a committee comprising of HoD as Chairman, Guide/co-guide, if any, and a senior faculty of the department. Students can present the seminar based on the completed mini project. Participation in the seminar by all postgraduate students of the program shall be mandatory.

The CIE marks awarded for Mini-Project work and Seminar, shall be based on the evaluation of Mini Project work and Report, Presentation skill and performance in Question-and-Answer session in the ratio 50:25:25. Mini-Project with Seminar shall be considered as a head of passing and shall be considered for vertical progression as well as for the award of degree. Those, who do not take- up/complete the Mini Project and Seminar shall be declared as fail in that course and must complete the same during the subsequent semester. There is no SEE for this course.

2. **Internship:** All the students shall have to undergo a mandatory internship of 06 weeks during the vacation of II and III semesters. A Semester End Examination shall be conducted during III semester and the prescribed internship credit shall be counted in the same semester. The internship shall be considered as a head of passing and shall be considered for vertical progression as well as for the award of degree. Those, who do not take-up/complete the internship shall be declared as fail in the internship course and must complete the same during the subsequent examinations after satisfying the internship requirement.

Professional Elective 3		Professional Elective 4	
Course Code (M23MSP203X)	Course Title	Course Code (M23MSP204X)	Course Title
M23MSP203A	Static Timing Analysis	M23MSP204A	Advances in VLSI Design
M23MSP203B	VLSI in Signal Processing	M23MSP204B	Cryptography and Network Security
M23MSP203C	Deep Learning in Signal Processing	M23MSP204C	Error Control Coding
M23MSP203D	Artificial Neural Networks and Applications	M23MSP204D	Business Intelligence and its Applications
M23MSP203E	Nano Electronics	M23MSP204E	Cyber Security



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III Semester

Sl. No	Course	Course Code	Course Title	Teaching Hours per Week			Examination				Credits
				Theory	Practical/ Seminar	Tutorial/Skill Development Activities	Duration in Hours	CIE Marks	SEE Marks	Total Marks	
				L	P	T/SDA					
1.	PC	M23MSP301	Adaptive Signal Processing	03	00	02	03	50	50	100	4
2.	PC	M23MSP302	DSP System Design	03	00	02	03	50	50	100	4
3.	PE	M23MSP303X	Professional Elective 5	03	00	00	03	50	50	100	3
4.	PW	M23MSP304	Project work Phase I	00	06	00	--	100	50	100	3
5.	SP	M23MSP305	Societal Project	00	06	00	--	100	50	100	3
6.	INT	M23MSP306	Internship	06 Weeks Internship Completed during the intervening vacation of II and III Semester				50	50	100	3
Total				09	12	03	12	400	250	600	20

**Note:** PCC: Professional core courses, PEC: Professional Elective Courses, IPCC-Integrated Professional Core Courses. MPS- Mini Project with Seminar; AUD/AEC; Audit Courses / Ability Enhancement Courses (Mandatory), PCL-Professional Core Course lab, L-Lecture, P-Practical, T/SDA-Tutorial / Skill Development Activities (Hours are for Interaction between faculty and students)

**Note:**

1) **Project Work Phase-1:** The project work shall be carried out individually. However, in case a disciplinary or interdisciplinary project requires more participants, then a group consisting of not more than three shall be permitted. Students in consultation with the guide/co-guide (if any) in disciplinary project or guides/co-guides (if any) of all



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departments in case of multidisciplinary projects, shall pursue a literature survey and complete the preliminary requirements of the selected Project work. Each student shall prepare a relevant introductory project document and present a seminar.

CIE marks shall be awarded by a committee comprising of HoD as Chairman, all Guide/s and co-guide/s (if any) and a senior faculty of the concerned departments. The CIE marks awarded for project work phase -1, shall be based on the evaluation of Project Report, Project Presentation skill, and performance in the Question-and-Answer session in the ratio of 50:25:25.

2) **Societal Project:** Students in consultation with the internal guide as well as with external guide (much preferable) shall involve in applying technology to workout/proposing viable solutions for societal problems.

CIE marks shall be awarded by a committee comprising of HoD as Chairman, Guide/co-guide if any, and a senior faculty of the department. The CIE marks awarded shall be based on the evaluation of Project Report, Project Presentation skill, and performance in the Question-and-Answer session in the ratio of 50:25:25.

Those, who have not pursued /completed the Societal Project, shall be declared as fail in the course and have to complete the same during subsequent semester/s after satisfying the Societal Project requirements. There is no SEE for this course.

3) **Internship:** Those, who have not pursued /completed the internship, shall be declared as fail in the internship course and have to complete the same during subsequent examinations after satisfying the internship requirements. Internship SEE shall be as per the Institute norms.

CIE marks shall be awarded by a committee comprising of HoD as Chairman, Guide/co-guide if any, and a senior faculty of the department. The CIE marks awarded for project work phase -1, shall be based on the evaluation of Project Report, Project Presentation skill, and performance in the Question-and-Answer session in the ratio of 50:25:25.

<b>Professional Elective 5</b>	
<b>Course Code (M23MSP303X)</b>	<b>Course Title</b>
M23MSP303A	Advanced Computer Architecture
M23MSP303B	Medical Imaging
M23MSP303C	Array Signal Processing
M23MSP303D	FinFETS and other multi gate transistor
M23MSP303E	Internet of Things (IoT)





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IV Semester

Sl. No	Course	Course Code	Course Title	Teaching Hours per Week		Examination				Credits
				Theory	Practical/Seminar	Duration in Hours	CIE Marks	SEE Marks	Total Marks	
				L	P					
1.	Project	M23MSP401	Project Work Phase II	--	10	03	100	100	200	19
Total				--	10	03	100	100	200	19

**Note:**

1. **Project Work Phase-2:** Students in consultation with the guide/co-guide (if any) in a disciplinary project or guides/co-guides (if any) of all departments in case of multidisciplinary projects, shall continue to work of Project Work phase -1 to complete the Project work. Each student / batch of students shall prepare project document and present a seminar.

CIE marks shall be awarded by a committee comprising of HoD as Chairman, all Guide/s and co-guide/s (if any) and a senior faculty of the concerned departments. The CIE marks awarded for project work phase -2 shall be based on the evaluation of Project Report, Project Presentation skill, and performance in the Question-and- Answer session in the ratio of 50:25:25.

SEE shall be at the end of IV semester. Project work evaluation and Viva-Voce examination (SEE), after satisfying the plagiarism check, shall be as per the Institute norms.