

# Regulation 2023

## Program Structure



### 2020 Diploma in Mechanical Engineering (SW)

#### Program Outcomes (PO's)

POs are statements that describe what students are expected to know and be able to do upon graduating from the program. These relate to the skills, knowledge, analytical ability, attitude, and behavior that students acquire through the program.

The POs essentially indicate what the students can do from subject-wise knowledge acquired by them during the program. As such, POs define the professional profile of an engineering diploma graduate.

NBA has defined the following seven POs for an Engineering diploma graduate:

**PO1:** Basic and Discipline-specific knowledge: Apply knowledge of basic mathematics, science and engineering fundamentals and an engineering specialization to solve the engineering problems.

**PO2:** Problem analysis: Identify and analyse well-defined engineering problems using codified standard methods.

**PO3:** Design/ development of solutions: Design solutions for well-defined technical problems and assist with the design of systems components or processes to meet specified needs.

**PO4:** Engineering Tools, Experimentation, and Testing: Apply modern engineering tools and appropriate technique to conduct standard tests and measurements.

**PO5:** Engineering practices for society, sustainability and environment: Apply appropriate technology in the context of society, sustainability, environment and ethical practices.

**PO6:** Project Management: Use engineering management principles individually, as a team member or as a leader to manage projects and effectively communicate about well-defined engineering activities.

**PO7:** Life-long learning: Ability to analyse individual needs and engage in updating in the context of technological changes.

### Credit Distribution

<b>Semester</b>	<b>No of Courses</b>	<b>Periods</b>	<b>Credits</b>
Semester I	8	640	20
Semester II	9	640	20
Semester III	8	640	21
Semester IV	2	585	15
Semester V	8	640	22
Semester VI	7	635	20
Semester VII	2	600	14
<b>Total</b>			<b>132</b>

**GOVERNMENT OF TAMIL NADU**  
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<b>Semester I</b>								
<b>#</b>	<b>Course Category</b>	<b>Course Type</b>	<b>Code</b>	<b>Course Title</b>	<b>L-T-P</b>	<b>Period</b>	<b>Credit</b>	<b>End Exam</b>
1	Humanities & Social Science	Theory	1000231110	Tamil Marabu	2-0-0	30	2	Theory
2	Basic Science	Theory	1000231230	Basic Mathematics	3-1-0	60	4	Theory
3	Basic Science	Practicum	1000231330	Basic Physics	2-0-2	60	3	Theory
4	Basic Science	Practicum	1000231430	Basic Chemistry	2-0-2	60	3	Theory
5	Engineering Science	Practical	1000231520	Digital Workplace Skills	0-0-4	60	2	Practical
6	Humanities & Social Science	Practicum	1000231640	Communicative English I	1-0-2	45	2	Practical
7	Engineering Science	Practicum	1000231740	Basic Workshop Practices	1-0-2	45	2	Practical
8	Open Elective	Advanced Skill Certification	1000231860	Basic English for Employability	0-0-4	60	2	Practical
9	Humanities & Social Science	Integrated Learning Experience	1000231880	Growth Lab	-	15	0	-
10	Audit Course	Integrated Learning Experience	1000231881	Induction Program - I	-	40	0	-
11	Audit Course	Integrated Learning Experience	1000231882	I&E/ Club Activity/ Community Initiatives	-	30	0	-
12	Audit Course	Integrated Learning Experience	1000231883	Shop Floor Immersion	-	8	0	-
13	Audit Course	Integrated Learning Experience	1000231884	Student-Led Initiative	-	22	0	-
14	Audit Course	Integrated Learning Experience	1000231886	Health & Wellness	-	30	0	-
Test & Revisions						60		NA
Library						15		
<b>Total</b>						<b>640</b>	<b>20</b>	

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<b>Semester II</b>								
<b>#</b>	<b>Course Category</b>	<b>Course Type</b>	<b>Code</b>	<b>Course Title</b>	<b>L-T-P</b>	<b>Period</b>	<b>Credit</b>	<b>End Exam</b>
1	Humanities & Social Science	Theory	1000232110	Tamils and Technology	2-0-0	30	2	Theory
2	Program Core	Theory	1020232210	Basics of Mechanical Engineering	3-0-0	45	3	Theory
3	Engineering Science	Lab	1000232320	Drafting Practices	0-0-4	60	2	Practical
4	Basic Science	Practicum	1000232440	Applied Mathematics – I	1-0-4	75	3	Practical
5	Basic Science	Practicum	1000232540	Applied Physics – I	1-0-2	45	2	Practical
6	Basic Science	Practicum	1000232640	Applied Chemistry – I	1-0-2	45	2	Practical
7	Engineering Science	Practicum	1000232740	Basic Engineering Practices	1-0-2	45	2	Practical
8	Humanities & Social Science	Practicum	1000232840	Communicative English – II	1-0-2	45	2	Practical
9	Open Elective	Advanced Skill Certification	1000232860	Advanced Skills Certification - II	1-0-2	45	2	NA
10	Humanities & Social Science	Integrated Learning Experience	1000232880	Growth Lab	-	30	0	-
11	Audit Course	Integrated Learning Experience	1000232882	I&E/ Club Activity / Community Initiatives	-	30	0	-
12	Audit Course	Integrated Learning Experience	1000232883	Shop Floor Immersion	-	8	0	-
13	Audit Course	Integrated Learning Experience	1000232884	Student Led Initiative	-	24	0	-
14	Audit Course	Integrated Learning Experience	1000232885	Emerging Technology Seminars	-	8	0	-
15	Audit Course	Integrated Learning Experience	1000232886	Health & Wellness	-	30	0	-
Test & Revisions						60		NA
Library						15		
<b>Total</b>						<b>640</b>	<b>20</b>	

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<b>Semester III</b>								
#	Course Category	Course Type	Code	Course Title	L-T-P	Period	Credit	End Exam
1	Program Core	Theory	1020233110	Manufacturing Process	3-0-0	45	3	Theory
2	Program Core	Practicum	1020233230	Strength of Materials	3-0-2	75	4	Theory
3	Program Core	Practical/Lab	1020233320	Workshop Practices	0-0-4	60	2	Practical
4	Program Core	Practicum	1020233440	Industrial drives and control	1-0-4	75	3	Practical
5	Program Core	Practicum	1020233540	Production Drawing and Modeling	1-0-4	75	3	Practical
6	Program Core	Practicum	1020233640	Machine Tool Technology	1-0-4	75	3	Practical
7	Open Elective	Advanced Skill Certification	1020233760	Advanced Skills Certification - III	1-0-2	60	2	NA
8	Humanities & Social Science	Integrated Learning Experience	1020233880	Growth Lab	-	30	0	-
9	Audit Course	Integrated Learning Experience	1020233881	Induction Program - II	-	16	0	-
10	Audit Course	Integrated Learning Experience	1020233882	I&E/ Club Activity/ Community Initiatives	-	16	0	-
11	Audit Course	Integrated Learning Experience	1020233883	Shop floor Immersion	-	8	0	-
12	Audit Course	Integrated Learning Experience	1020233884	Student-Led Initiative	-	22	0	-
13	Audit Course	Integrated Learning Experience	1020233885	Emerging Technology Seminars	-	8	0	-
14	Audit Course	Integrated Learning Experience	1020233886	Health & Wellness	0-0-2	30	1	-
Test & Revisions						30		NA
Library						15		
<b>Total</b>						<b>640</b>	<b>21</b>	

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<b>Semester IV</b>								
#	Course Category	Course Type	Code	Course Title	L-T-P	Period	Credit	End Exam
1	Program Core	Theory	1020234110	Advanced Manufacturing Technology	3-0-0	45	3	Theory
2	Industrial Training / Project	Project/Internship	2020234274	Industrial Training (SW)	-	540	12	Project
<b>Total</b>						<b>585</b>	<b>15</b>	

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<b>Semester V</b>								
#	Course Category	Course Type	Code	Course Title	L-T-P	Period	Credit	End Exam
1	Program Core	Practicum	1020234230	Fluid Mechanics	2-0-2	60	3	Theory
2	Program Core	Practical/Lab	1020234320	Advanced Manufacturing Technology Practical	0-0-4	60	2	Practical
3	Program Core	Practicum	1020234440	Sensors and Actuators	1-0-4	75	3	Practical
4	Program Core	Practicum	1020234540	Heat power engineering	1-0-4	75	3	Practical
5	Program Core	Practicum	1020234640	Metrology and Measurements	1-0-4	75	3	Practical
6	Program Core	Theory	1020235110	Elements of Machine Design	3-0-0	45	3	Theory
7	Program Elective	Practicum		Elective - I	2-0-2	60	3	Theory
8	Open Elective	Advanced Skill Certification	1020234760	Advanced Skills Certification - IV	1-0-2	60	2	NA
9	Audit Course	Integrated Learning Experience	1020234882	I&E/ Club Activity/ Community Initiatives	-	15	0	-
10	Audit Course	Integrated Learning Experience	1020234883	Shop floor Immersion	-	8	0	-
11	Audit Course	Integrated Learning Experience	1020234884	Student-Led Initiative	-	24	0	-
12	Audit Course	Integrated Learning Experience	1020234885	Emerging Technology Seminars	-	8	0	-
13	Audit Course	Integrated Learning Experience	1020234886	Health & Wellness	-	15	0	-
14	Audit Course	Integrated Learning Experience	1020234887	Special Interest Groups (Placement Training)	-	15	0	-
Test & Revisions						45		
<b>Total</b>						<b>640</b>	<b>22</b>	

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<b>Semester VI</b>								
#	Course Category	Course Type	Code	Course Title	L-T-P	Period	Credit	End Exam
2	Program Core	Practicum	1020235230	Industrial Engineering and Management	3-0-2	75	4	Theory
2	Program Core	Practicum	1020235440	Maintenance, Repairs & Service	1-0-4	75	3	Practical
3	Program Elective	Practicum		Elective -II	1-0-4	75	3	Practical
4	Open Elective	Theory		Electives-III (Pathway)	3-0-0	45	3	Theory
5	Open Elective	Practicum		Elective-IV (Specialisation)	1-0-4	75	3	Practical
6	Humanities & Social Science	Practicum	1020235654	Innovation & Startup	1-0-2	45	2	Project
7	Open Elective	Advanced Skill Certification	1020235860	Advanced Skills Certification - V	1-0-2	60	2	NA
8	Audit Course	Integrated Learning Experience	1020235981	Induction program III	-	40	0	-
9	Audit Course	Integrated Learning Experience	1020235984	Student-Led Initiative	-	30	0	-
10	Audit Course	Integrated Learning Experience	1020235986	Health & Wellness	-	30	0	-
11	Audit Course	Integrated Learning Experience	1020235987	Special Interest Groups (Placement Training)	-	40	0	-
Test & Revisions						30		
Library						15		
<b>Total</b>						<b>635</b>	<b>20</b>	



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<b>Semester VII</b>								
#	Course Category	Course Type	Code	Course Title	L-T-P	Period	Credit	End Exam
1	Project/Internship	Project/Internship	2020235773	Mini Project (SW)	0-0-4	60	2	Project
2	Industrial Training / Project	Project/Internship	2020237274	Industrial Training (SW)	-	540	12	Project
<b>Total</b>						<b>600</b>	<b>14</b>	

Note: Mini Project can be done as per the guidelines of in-house project.

<b>Elective - I</b>								
#	Course Category	Course Type	Code	Course Title	L-T-P	Period	Credit	End Exam
1	Program Elective	Practicum	1020235331	Modern QC Tools	2-0-2	60	3	Theory
2	Program Elective	Practicum	1020235332	Composite Materials	2-0-2	60	3	Theory
3	Program Elective	Practicum	1020235333	Refrigeration and Air-Conditioning	2-0-2	60	3	Theory
4	Program Elective	Practicum	1020235334	Value Engineering	2-0-2	60	3	Theory
5	Program Elective	Practicum	1020235335	Green Manufacturing	2-0-2	60	3	Theory
6	Program Elective	Practicum	1020235336	Lean Manufacturing	2-0-2	60	3	Theory
7	Program Elective	Practicum		Inter discipline course #	2-0-2	60	3	Theory

**# Courses from other programmes with the same credit can be considered after proper approval from the Chairman Board of Examinations.**

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**Elective - II**

#	Course Category	Course Type	Code	Course Title	L-T-P	Period	Credit	End Exam
1	Program Elective	Practicum	1020235541	CNC Programming	1-0-4	75	3	Practical
2	Program Elective	Practicum	1020235542	Systems Applications and Product (SAP)	1-0-4	75	3	Practical
3	Program Elective	Practicum	1020235543	Industrial IoT	1-0-4	75	3	Practical
4	Program Elective	Practicum	1020235544	Advanced Welding Technologies	1-0-4	75	3	Practical
5	Program Elective	Practicum	1020235545	Industrial Robotics	1-0-4	75	3	Practical
6	Program Elective	Practicum	1020235546	HVAC Systems and Components	1-0-4	75	3	Practical
7	Program Elective	Practicum	1020235547	Automobile Technology	1-0-4	75	3	Practical

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**Elective - III (Pathway)**

#	Course Category	Course Type	Code	Course Title	L-T-P	Period	Credit	End Exam
1	Elective   Higher Education	Theory	6000236111	Advanced Engineering Mathematics	3-0-0	45	3	Theory
2	Elective   Entrepreneurship	Theory	6000236112	Entrepreneurship	3-0-0	45	3	Theory
3	Elective   Technocrats	Theory	6000236113	Project Management	3-0-0	45	3	Theory
4	Elective   Technocrats	Theory	6000236114	Finance Fundamentals	3-0-0	45	3	Theory
5	Elective   Technologists	Theory	1020236115	Industry 4.0	3-0-0	45	3	Theory
6	Elective   Technologists	Theory	1020236116	Additive Manufacturing	3-0-0	45	3	Theory
7	Elective   Technologists	Theory	1020236117	Power Plant Engineering	3-0-0	45	3	Theory
8	Elective   Open elective	Theory		Online Elective Courses \$	3-0-0	45	3	Theory

**\$ Online courses with the same credit available in AICTE, SWAYAM, NPTEL and reputed Institutions with the proper evaluation system and certification can be considered after proper approval from the Chairman Board of Examinations.**

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**Elective - IV (Specialization)**

#	Course Category	Course Type	Code	Course Title	L-T-P	Period	Credit	End Exam
1	Elective	Practicum	1020236241	MEP Equipment Servicing	1-0-4	75	3	Practical
2	Elective	Practicum	1020236242	Maintenance of Machine Tools	1-0-4	75	3	Practical
3	Elective	Practicum	1020236243	Non-Destructive Testing	1-0-4	75	3	Practical
4	Elective	Practicum	1020236244	Process Automation	1-0-4	75	3	Practical
5	Elective	Practicum	1020236245	Product Design & Development	1-0-4	75	3	Practical
6	Elective	Practicum	1020236246	Electric Vehicle Technology	1-0-4	75	3	Practical
7	Elective	Practicum	1020236247	Reverse Engineering	1-0-4	75	3	Practical
8	Elective	Practicum	1020236248	Green Energy & Engineering	1-0-4	75	3	Practical