

**SRI CHANDRASEKHARENDRA SARASWATHI VISWA MAHA
VIDYALAYA**

(Deemed to be University U/S 3 of UGC Act 1956)
Accredited with “A” Grade by NAAC
Enathur, Kanchipuram - 631 561.



FULL TIME BE – MECHATRONICS ENGINEERING
(Students admitted from 2018-19 onwards)

CURRICULUM

(Choice based credit system)

FULL TIME BE – MECHATRONICS ENGINEERING

VISION

Academic Excellence and to be in dynamic equilibrium with Contemporary Industry.

MISSION

- To develop students with strong foundation in fundamentals
- To establish a laboratory with latest technologies.
- To provide continuous help to students to develop their overall personality, skills, confidence and character.

PROGRAMME EDUCATIONAL OBJECTIVES

Graduates of this program

PEO 1 Comprises strong fundamental knowledge in solving multi-disciplinary problems

PEO 2 Possess successful technical or professional careers

PEO 3 Continue to learn and to adapt to the day to day evolving technology in the world

PEO 4 Encouraged to design industrial automation systems that are innovative and socially acceptable.

DEFINITION OF CREDIT

1 Hour Lecture / week (L)	1 credit
1 Hour Tutorial / week (T)	1 credit
1 Hour Practical / week (P)	0.5 credit

COURSE CODE AND DEFINITION

COURSE CODE	DEFINITIONS
L	Lecture
T	Tutorial
P	Practical
BSC	Basic Science Courses
ESC	Engineering Science Courses
HSMC	Humanities / Social Sciences / Management Courses
PCC	Programme Core Courses
PEC	Professional Elective Courses
OEC	Open Elective Courses
LC	Laboratory Course
MC	Mandatory Courses
PIIC	Project / Industrial Practice / Internship Courses

STRUCTURE OF MECHATRONICS ENGINEERING PROGRAM

SL.NO	CATEGORY	CREDITS
1.	Basic Science Courses (BSC)	22
2.	Engineering Science Courses (ESC)	26
3.	Programme Core Courses (PCC)	72
4.	Professional Elective Courses (PEC)	21
5.	Humanities / Social Sciences / Management Courses (HSMC)	6
6.	Project / Industrial Practice / Internship Courses (PIIC)	14
7.	Open Elective Courses (OEC)	12
8.	Mandatory Course (MC)	12*
Total Credits		173

*Not included in total credits

B.E.(MECHATRONICS) – CURRICULUM*(For candidates admitted during the academic year 2018 -19 onwards)***Semester-wise structure of curriculum****[L = Lecture, T= Tutorial, P = Practical & C = Credit]****[IA = Internal Assessment, EA = External Assessment & TM = Total Mark]****Semester I (First year)**

SL.No	Category	Code	Course Title	Hours per Week			Credit	IA	EA	TM
				L	T	P				
1	HSMC	CHSEN18T10	English ^{\$}	3	1	-	3	40	60	100
2	BSC	CBSMA18T20	Mathematics I ^{\$} (Calculus & Differential Equations)	3	1	-	4	40	60	100
3	BSC	CBSPH18T30	Engineering Physics ^{\$}	3	1	-	3	40	60	100
4	ESC	CESCS18T40	Programming for Problem Solving [@]	3	1	-	3	40	60	100
5	BSC	CBSPH18P50	Physics Lab ^{\$}	-	-	3	2	40	60	100
6	ESC	CESCS18P60	Programming for Problem SolvingLab [@]	-	-	3	2	40	60	100
7	ESC	CESME18P70	Workshop/Manufacturing Practices ^{##}	-	-	3	2	40	60	100
			Total	12	4	9	19	210	420	700

^{\$} Science & Humanities^{##} Mechanical[@] CSE**Total Credits: 19****Semester II (First year)**

SL.No	Category	Code	Course Title	Hours per week			Credit	IA	EA	TM
				L	T	P/D				
1	BSC	CBSCH18T20	Engineering Chemistry ^{\$} (Chemistry - I)	3	1	-	3	40	60	100
2	BSC	CBSMAF8T10	Mathematics – II ^{\$} (Linear Algebra, Transform Calculus and Numerical methods)	3	1	-	4	40	60	100
3	ESC	CESEE18T30	Basic Electrical Engineering [#]	3	1	-	3	40	60	100
4	BSC	CBSCH18P60	Chemistry Lab ^{\$}	-	-	3	2	40	60	100
5	ESC	CESEE18P70	Basic Electrical Engineering Lab [#]	-	-	3	2	40	60	100
6	ESC	CESME18P50	Engineering Graphics & Design ^{\$}	-	-	3	3	40	60	100
7	MC*	CMCCH28T50	Environmental Sciences and Engineering*	--	-	-	2*	40	60	100
			Total	9	3	9	17	210	420	700

^{\$} Science & Humanities[#] EIE**Total Credits: 17+2***

*Mandatory Course

Semester III (Second year)

SL.No	Category	Code	Course Title	Hours per week			Credit	IA	EA	TM
				L	T	P				
1	BSC	BMTF183T10	Mathematics III [§] (Probability and Statistics)	3	1	-	4	40	60	100
2	PCC	BMTF183T30	Electronic Devices and Circuits [#]	3	0	-	3	40	60	100
3	PCC	BMTF183T40	Engineering Mechanics ^{##}	2	1	-	3	40	60	100
4	PCC	BMTF183T50	Manufacturing Technology for Mechatronics ^{##}	3	0	-	3	40	60	100
5	PCC	BMTF183T60	Sensors & Actuators [#]	3	0	-	3	40	60	100
6	ESC	BMTF183T20	Object Oriented Programming Using C++ [@]	3	0	-	3	40	60	100
7	MC*	BETF183MC2	Sanskrit & Indian Culture*	2	0	-	2*	40	60	100
8	PCC	BMTF183P80	Electronic Devices and Circuits Lab [#]	-	-	3	2	40	60	100
9	PCC	BMTF183P90	Manufacturing Process Lab ^{##}	-	-	3	2	40	60	100
10	ESC	BMTF183P70	Object Oriented Programming Using C++ LAB [@]	-	-	3	2	40	60	100
11	MC*	BETF183MC3	Soft Skill - I**	-	-	1	1**	40	60	100
			Total	21	2	10	25	440	660	1100

*Mandatory Course
** Not for CGPA

EIE @ CSE
Mechanical \$ Science & Humanities

Total Credits: 25+3*

Semester IV (Second year)

SL.No	Category	Code	Course Title	Hours per week			Credit	IA	EA	TM
				L	T	P				
1	PCC	BMTF184T10	Strength of Materials and FluidMechanics ^{##}	3	0	-	3	40	60	100
2	ESC	BMTF184T20	Industrial Instrumentation [#]	3	0	-	3	40	60	100
3	PCC	BMTF184T30	Materials Engineering ^{##}	3	0	-	3	40	60	100
4	PCC	BMTF184T40	Thermodynamics ^{##}	3	0	-	3	40	60	100
5	PCC	BMTF184T50	Linear Integrated Circuits [#]	3	0	-	3	40	60	100
6	PCC	BMTF184T60	Digital Electronics [#]	3	0	-	3	40	60	100
7	PCC	BMTF184P70	Linear Integrated Circuits & Digital Electronics Lab [#]	-	-	3	2	40	60	100
8	PCC	BMTF184P80	Thermal Engineering Lab ^{##}	-	-	3	2	40	60	100
9	PCC	BMTF184P90	Strength of Materials and FluidMechanics Lab ^{##}	-	-	3	2	40	60	100
10	MC*	BETF184MC4	Soft Skill –II **	-	-	1	1**	40	60	100
			Total	18	0	10	24	400	600	1000

** Not for CGPA

EIE
Mechanical

Total Credits: 24+1**

Semester V (Third year)

SL.No	Category	Code	Course Title	Hours per Week			Credit	IA	EA	TM
				L	T	P				
1	PEC	BMTF185E	Professional Elective I ^{##}	3	0	-	3	40	60	100
2	OEC	BMTF185OE	Open Elective I	3	0	-	3	40	60	100
3	PCC	BMTF185T10	Control Systems [#]	2	1	-	3	40	60	100
4	ESC	BMTF185T20	Analytical Instrumentation [#]	2	1	-	3	40	60	100
5	PCC	BMTF185T30	Fluid Power Systems ^{##}	3	0	-	3	40	60	100
6	PCC	BMTF185T40	Power Electronics and Industrial Drives [#]	3	0	-	3	40	60	100
7	PCC	BMTF185P70	Fluid Power Control Lab ^{##}	-	-	3	2	40	60	100
8	PCC	BMTF185P80	Power Electronics and Industrial Drives Lab [#]	-	-	3	2	40	60	100
9	PCC	BMTF185P90	Machine Drawing Lab ^{##}	-	-	3	2	40	60	100
10	MC*	BETF185MC05	Soft Skill - III ^{**}	-	-	1	1 ^{**}	40	60	100
11	Optional OEC ^{**}	BMTF18OE	French Primer / Japanese Primer / German Primer	-	-	1	2 ^{**}	40	60	100
Total				16	2	11	24	440	660	1100

** Not for CGPA

EIE

Total Credits: 24 + 3^{}**

^{##} Mechanical

Semester VI (Third year)

SL.No	Category	Code	Course Title	Hours per Week			Credit	IA	EA	TM
				L	T	P				
1	PEC	BMTF186E	Professional Elective II [#]	3	0	-	3	40	60	100
2	OEC	BMTF186OE	Open Elective II	3	0	-	3	40	60	100
3	HSMC	BMTF186T30	Principles of Management and Professional Ethics [§]	3	0	-	3	40	60	100
4	PCC	BMTF186T20	Microprocessors and Microcontrollers [#]	3	0	-	3	40	60	100
5	PCC	BMTF186T10	PLC & Data Acquisition System	3	0	-	3	40	60	100
6	PCC	BMTF186T40	CAD / CAM ^{##}	2	1	-	3	40	60	100
7	PCC	BMTF186P70	Microprocessors and Microcontrollers Lab [#]	-	-	3	2	40	60	100
8	PCC	BMTF186P80	CAD / CAM Lab ^{##}	-	-	3	2	40	60	100
9	PCC	BMTF186P90	PLC & Virtual Instrumentation Lab	-	-	3	2	40	60	100
10.	Optional OEC ^{**}	BEIF18OOE	French Primer / Japanese Primer / German Primer	-	-	1	2 ^{**}	40	60	100
11.	MC*	BETF18MC06	Soft Skill - IV ^{**}	-	-	1	1 ^{**}	40	60	100
Total				17	1	11	24	440	660	1100

** Not for CGPA

EIE

Total Credits: 24+3^{}**

[§] Science & Humanities

^{##} Mechanical

Semester VII (Fourth Year)

SL. No	Category	Code	Course Title	Hours per week			Credit	IA	EA	TM
				L	T	P				
1	PCC	BMTF187T10	Robotics & Automation	3	0	-	3	40	60	100
2	PEC	BMTF187E	Professional Elective III #	3	0	-	3	40	60	100
3	PEC	BMTF187E	Professional Elective IV ##	3	0	-	3	40	60	100
4	PEC	BMTF187E	Professional Elective V ##	3	0	-	3	40	60	100
5	OEC	BMTF187OE	Open Elective III	3	0	-	3	40	60	100
6	PCC	BMTF187P60	Robotics Automation & Process control Lab	-	-	3	2	40	60	100
7		BMTF187P70	Internship & Industrial Visit***	-	-	-	2	40	60	100
8		BMTF187P80	Project Phase I #	-	-	-	2	40	60	100
			Total	15	0	3	21	320	480	800

***Industrial visit (minimum 5 visits from I to VI sem) and minimum 5 weeks Internship should be carried out.

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Total Credits: 21

Semester VIII (Fourth year)

SL.No	Category	Code	Course Title	Hours per Week			Credit	IA	EA	TM
				L	T	P				
1	PEC	BMTF188E	Professional Elective VI ##	3	0	-	3	40	60	100
2	PEC	BMTF188E	Professional Elective VII #	3	0	-	3	40	60	100
3	OEC	BMTF188O	Open Elective IV	3	0	-	3	40	60	100
4		BMTF188Z40	Project Phase II #	-	-	-	10	40	60	100
			Total	9	0	-	19	160	240	400

EIE
Mechanical

Total Credits: 19

SUMMARY OF CREDIT DISTRIBUTION

Course / Sem	I	II	III	IV	V	VI	VII	VIII	TOTAL
HSMC	3	-	-	-	-	3	-	-	6
BSC	9	9	4	-	-	-	-	-	22
ESC	7	8	5	3	3	-	-	-	26
PCC	-	-	16	21	15	15	5	-	72
PEC	-	-	-	-	3	3	9	6	21
OEC	-	-	-	-	3	3	3	3	12
MC & Optional OEC	-	2*	3*	1*	3*	3*	-	-	12*
PROJECT	-	-	-	-	-	-	2	10	12
IV/ Internship	-	-	-	-	-	-	2	-	2
	19	17+2*	25+3*	24+1*	24+3*	24+3*	21	19	173

*Not included in total credits

LIST OF PROFESSIONAL ELECTIVE COURSES**Professional Elective Course I (V Sem)**

S.No	Sub.Code	Subject Name
1	BMTF185EA0	Theory of Machines
2	BMTF185EB0	Metrology and quality control
3	BMTF185EC0	Refrigeration and Air Conditioning
4	BMTF185ED0	Internal Combustion Engines

Professional Elective Course II (VI Sem)

S.No	Sub.Code	Subject Name
1	BMTF186EE0	Virtual Instrumentation
2	BMTF186EH0	Energy Management and Industrial Safety
3	BMTF186EF0	Process Control Instrumentation
4	BMTF186EG0	Principles of Communication

Professional Elective Course III (VII Sem)

S.No	Sub.Code	Subject Name
1	BMTF187EI0	Embedded Systems
2	BMTF187EJ0	Power Plant Instrumentation
3	BMTF187EK0	Neural Networks and Fuzzy Logic Control
4	BMTF187EL0	Battery Technology

Professional Elective Course IV (VII Sem)

S.No	Sub.Code	Subject Name
1	BMTF187EM0	Machine Design
2	BMTF187EN0	Finite Element Analysis
3	BMTF187EO0	Design of Jigs and Fixtures
4	BMTF187EP0	Total Quality Management

Professional Elective Course V (VII Sem)

S.No	Sub.Code	Subject Name
1	BMTF187EQ0	Rapid Manufacturing Technologies
2	BMTF187ER0	Computer Integrated Manufacturing (CIM)
3	BMTF187ES0	Process Planning and Cost Estimation
4	BMTF187ET0	Mechanical Vibration and noise control

Professional Elective VI (VIII Sem)

S.No	Sub.Code	Subject Name
1	BMTF188EU0	Machine Vision
2	BMTF188EV0	Autotronics
3	BMTF188EW0	Design of Mechatronics Systems
4	BMTF188EX0	Flexible manufacturing systems

Professional Elective VII (VIII Sem)

S.No	Sub.Code	Subject Name
1	BMTF188EY0	Micro Electro Mechanical Systems (MEMS)
2	BMTF188EZ0	VLSI Design
3	BMTF188EA1	IOT in Automation
4	BMTF188EB1	Digital control System

LIST OF OPEN ELECTIVE COURSES**Open Elective Course I (V Sem)**

S.No	Sub.Code	Subject Name
1	BMTF185OEA	Electrical and Mechanical Measurements
2	BMTF185OEB	Operations Research
3	BMTF185OEC	Green and Smart Buildings
4	BMTF185OED	Electric Hybrid Vehicle Technology

Open Elective Course II (VI Sem)

S.No	Sub.Code	Subject Name
1	BMTF186OEE	Bio Medical Instrumentation
2	BMTF186OEF	Human Resource Management
3	BMTF186OEG	Waste water Engineering
4	BMTF186OEH	Radar and Navigation

Open Elective Course III (VII Sem)

S.No	Sub.Code	Subject Name
1	BMTF187OEI	Aircraft Instrumentation
2	BMTF187OEJ	Energy Harvesting Technologies
3	BMTF187OEK	Disaster Management
4	BMTF187OEL	Data Communication and network Systems

Open Elective Course IV (VIII Sem)

S.No	Sub.Code	Subject Name
1	BMTF188OEM	Nano Technology
2	BMTF188OEN	Big Data Analytics
3	BMTF188OEO	Satellite Communication
4	BMTF188OEP	Data Compression Techniques
5	BMTF188OEQ	Entrepreneurship Development

Optional Open Elective Course – Foreign Language

S.No	Sub.Code	Subject Name
1	BEIF180OEA	French Primer
2	BEIF180OEB	Japanese Primer
3	BEIF180OEC	German Primer