



**GOVERNMENT COLLEGE OF ENGINEERING
SALEM – 636 011**

**(An Autonomous Institution affiliated to
Anna University- Chennai)**

**Regulations 2018 - Autonomous Courses
(For Students Admitted from 2018 – 2019)**

DEPARTMENT OF METALLURGICAL ENGINEERING

**CURRICULUM & SYLLABUS
(Choice based credit system)**

B.E. METALLURGICAL ENGINEERING (F.T)

GOVERNMENT COLLEGE OF ENGINEERING SALEM - 636001
(An Autonomous Institution, Affiliated to Anna University, Chennai)

Regulations 2018 - Autonomous Courses
(For Students Admitted from 2018-2019)

B.E. METALLURGICAL ENGINEERING - FULL TIME

Course code	Name of the Course	Hours/week						Maximum Marks			
		Category	Contact periods	Lecture	Tutorial/ Demo*	Practical	Credits	CA	FE	Total	
SEMESTER I											
THEORY											
I8EN101	Professional English	HS	2	2	0	0	2	40	60	100	
I8MA101	Matrices and Calculus	BS	4	3	1	0	4	40	60	100	
I8CY101	Chemistry	BS	4	3	1	0	4	40	60	100	
I8CS101	Fundamentals of Problem solving and Programming	ES	3	3	0	0	3	40	60	100	
PRACTICAL											
I8EN102	Professional English Laboratory	HS	2	0	0	2	1	40	60	100	
I8CS102	Computer Practice Laboratory	ES	4	0	0	4	2	40	60	100	
I8ME102	Workshop Manufacturing Practices	ES	5	1	0	4	3	40	60	100	
18MC101	Induction Program	MC	0	0	0	0	0				
TOTAL				24	12	2	10	19	-	-	700
SEMESTER II											
THEORY											
18MA201	Differential Equations and Complex variables	BS	4	3	1	0	4	40	60	100	
18PH101	Physics - Mechanics	BS	4	3	1	0	4	40	60	100	
18EE203	Basic Electrical Engineering for Metallurgy	ES	4	3	1	0	4	40	60	100	
18ME101	Engineering graphics and Design	ES	5	1	0	4	3	40	60	100	
PRACTICAL											
18PH103	Physics Laboratory	BS	3	0	0	3	1.5	40	60	100	
18CY102	Chemistry Laboratory	BS	3	0	0	3	1.5	40	60	100	
18EN103	Professional Communication Laboratory	HS	2	0	0	2	1	40	60	100	
18EE204	Basic Electrical Engineering Laboratory for Metallurgy	ES	2	0	0	2	1	40	60	100	
TOTAL				27	10	3	14	20	-	-	800

Course code	Name of the Course	Hours/week						Maximum Marks			
		Category	Contact periods	Lecture	Tutorial/ Demo*	Practical	Credits	CA	FE	Total	
SEMESTER III											
THEORY											
18MA204	Fourier Series & Transforms	BS	4	3	1	0	4	40	60	100	
18MT301	Elements of Physical Metallurgy	PC	4	3	1	0	4	40	60	100	
18MT302	Mineral Dressing, Fuels & Furnaces	PC	3	3	0	0	3	40	60	100	
18MT303	Metallurgical Thermodynamics & Kinetics	PC	4	3	1	0	4	40	60	100	
18MT304	Testing of Materials	PC	3	3	0	0	3	40	60	100	
18CE305	Engineering Mechanics	ES	4	3	1	0	4	40	60	100	
PRACTICAL											
18MT305	Metallography Laboratory	PC	3	0	0	3	1	40	60	100	
18MT306	Chemical Metallurgy Laboratory	PC	3	0	0	3	1	40	60	100	
18CYMC01	Environmental Sciences	MC	1	0	0	1	0				
TOTAL				29	18	4	7	24	-	-	800
SEMESTER IV											
THEORY											
18MA302	Statistics and Numerical Methods	BS	4	3	1	0	4	40	60	100	
18CY301	Biology for Engineers	BS	3	2	1	0	3	40	60	100	
18MT401	Mechanical Behaviour of Materials	PC	3	3	0	0	3	40	60	100	
18MT402	Phase Transformation	PC	3	3	0	0	3	40	60	100	
18MT403	Iron Making	PC	3	3	0	0	3	40	60	100	
18XXXXX	Open Elective Course I	OE	3	3	0	0	3	40	60	100	
PRACTICAL											
18MT404	Material Testing Laboratory	PC	3	0	0	3	1	40	60	100	
18MT405	Machine shop Practice	PC	3	0	0	3	1	40	60	100	
TOTAL				25	17	2	6	21	-	-	800

Course code	Name of the Course	Hours/week						Maximum Marks			
		Category	Contact periods	Lecture	Tutorial/ Demo*	Practical	Credits	CA	FE	Total	
SEMESTER V											
THEORY											
18MT501	Heat treatment and Surface Engineering	PC	3	3	0	0	3	40	60	100	
18MT502	Steel Making	PC	3	3	0	0	3	40	60	100	
18MT503	Corrosion Engineering	PC	3	3	0	0	3	40	60	100	
18MT504	Introduction to Instrumentation	ES	3	3	0	0	3	40	60	100	
18MTXXX	Professional Elective course I	PE	3	3	0	0	3	40	60	100	
18MTXXX	Professional Elective course II	PE	3	3	0	0	3	40	60	100	
PRACTICAL											
18MT505	Heat treatment Laboratory	PC	3	0	0	3	1	40	60	100	
18MT506	Corrosion Science Laboratory	PC	3	0	0	3	1	40	60	100	
TOTAL				24	18	0	06	20	-	-	800
SEMESTER VI											
THEORY											
18MT601	Non Ferrous Extractive Metallurgy	PC	3	3	0	0	3	40	60	100	
18MT602	Forming Processes	PC	3	3	0	0	3	40	60	100	
18MT603	Foundry Processes and Metallurgy	PC	3	3	0	0	3	40	60	100	
18MT604	Welding Processes and Metallurgy	PC	3	3	0	0	3	40	60	100	
18MTXXX	Professional Elective Course III	PE	3	3	0	0	3	40	60	100	
18XXXXX	Open Elective Course II	OE	3	3	0	0	3	40	60	100	
18MC301	Indian Constitution	MC	2	0	0	0	0				
PRACTICAL											
18MT605	Welding & NDT Laboratory	PC	3	0	0	3	1	40	60	100	
18MT606	Foundry & Forming Processes Laboratory	PC	3	0	0	3	1	40	60	100	
18EN501	Communication Skills Laboratory	HS	4	0	0	4	2	40	60	100	
TOTAL				30	18	0	10	22	-	-	900

Course code	Name of the Course	Hours/week						Maximum Marks			
		Category	Contact periods	Lecture	Tutorial/ Demo*	Practical	Credits	CA	FE	Total	
SEMESTER VII											
THEORY											
18MT701	Characterization of Materials	PC	3	3	0	0	3	40	60	100	
18MT702	Introduction to Industrial Management	HS	3	3	0	0	3	40	60	100	
18MTXXX	Professional Elective Course IV	PE	3	3	0	0	3	40	60	100	
18MTXXX	Professional Elective Course V	PE	3	3	0	0	3	40	60	100	
18XXXXX	Open Elective Course III	OE	3	3	0	0	3	40	60	100	
18XXXXX	Open Elective Course IV	OE	3	3	0	0	3	40	60	100	
PRACTICAL											
18MT703	Materials Characterization Laboratory	PC	3	0	0	3	1	40	60	100	
18MT704	Computer application in Metallurgy Laboratory	PC	3	0	0	3	1	40	60	100	
TOTAL				24	18	0	6	20	-	-	800
SEMESTER VIII											
THEORY											
18MT801	Total Quality Management	HS	3	3	0	0	3	40	60	100	
18MTXXX	Professional elective course VI	PE	3	3	0	0	3	40	60	100	
18MT802	Project Work	EEC	16	0	0	16	10			200	
TOTAL				22	6	0	16	16	-	-	400

CREDIT DISTRIBUTION SEMESTER WISE

SEMESTER	I	II	III	IV	V	VI	VII	VIII	TOTAL
CREDITS	19	20	24	21	20	22	20	16	162

BS	Basic Sciences	PC	Professional Core
HS	Humanities and Social Sciences	PEC	Professional Elective
ES	Engineering Sciences	OE	Open Elective
MC	Mandatory Course		
EEC	Employability Enhancement Course		

SUMMARY OF CREDIT DISTRIBUTION TABLE

B.E., METALLURGICAL ENGINEERING											
S.NO	Course Work subject Area	Credits Per Semester								Total Credit	Credits recommended by AICTE
		I	II	III	IV	V	VI	VII	VIII		
1	Basic Sciences	8	11	4	7	-	-	-	-	30	25
2	Humanities and Social Sciences	3	1	-	-	-	2	3	3	11	12
3	Engineering Sciences	8	8	4	-	3	-	-	-	23	24
4	Professional Core	-	-	16	11	11	14	5	-	57	48
5	Professional Elective	-	-	-	-	6	3	6	3	18	18
6	Open Elective	-	-	-	3	-	3	6	-	12	18
7	Employment Enhancement Course	-	-	-	-	-	-	-	10	10	15
8	Mandatory Course	0 [#]	-	0 [#]	-	-	0 [#]	-	-	00	-
TOTAL		19	20	24	21	20	22	20	16	162	160*

0[#] - Non credit Course

*Minor variation is allowed as per need of the respective disciplines.

PROFESSIONAL ELECTIVE COURSES (PEC)

S.N O	COURSE CODE	COURSE TITLE	CATEGORY	CONTACT PERIODS	L	T	P	C
PROFESSIONAL ELECTIVE I								
1.	18MTE11	Transport phenomena	PE	3	3	0	0	3
2.	18MTE12	Fractography and failure analysis	PE	3	3	0	0	3
3.	18MTE13	Metallurgical kinetics	PE	3	3	0	0	3
4.	18MTE14	Solidification Processing	PE	3	3	0	0	3
5.	18MTE15	Fracture Mechanics	PE	3	3	0	0	3
PROFESSIONAL ELECTIVE II								
1.	18MTE21	Ferrous and Non Ferrous alloys	PE	3	3	0	0	3
2.	18MTE22	Composite Materials	PE	3	3	0	0	3
3.	18MTE23	Ceramic materials	PE	3	3	0	0	3
4.	18MTE24	Metallurgy of tool Steels	PE	3	3	0	0	3
5.	18MTE25	Bio and smart materials	PE	3	3	0	0	3
PROFESSIONAL ELECTIVE III								
1.	18MTE31	Nonmetallic Materials	PE	3	3	0	0	3

2.	18MTE32	Continuous casting of steel	PE	3	3	0	0	3
3.	18MTE33	Special casting Technology	PE	3	3	0	0	3
4.	18MTE34	Alternate routes of Iron making	PE	3	3	0	0	3
5.	18MTE35	Secondary steel making	PE	3	3	0	0	3
PROFESSIONAL ELECTIVE IV								
1.	18MTE41	Particulate processing Technology	PE	3	3	0	0	3
2.	18MTE42	Severe plastic deformation	PE	3	3	0	0	3
3.	18MTE43	Metallurgical waste utilization and management	PE	3	3	0	0	3
4.	18MTE44	Computational Materials Engineering	PE	3	3	0	0	3
5.	18MTE45	Special welding processes	PE	3	3	0	0	3
PROFESSIONAL ELECTIVE V								
1.	18MTE51	Physics of Engineering Materials	PE	3	3	0	0	3
2.	18MTE52	X- ray diffraction and Electron microscopy	PE	3	3	0	0	3
3.	18MTE53	Electrical ,Electronics and magnetic materials	PE	3	3	0	0	3
4.	18MTE54	Surface engineering	PE	3	3	0	0	3
5.	18MTE55	Additive manufacturing	PE	3	3	0	0	3
PROFESSIONAL ELECTIVES VI								
1.	18MTE61	Nano Materials	PE	3	3	0	0	3
2.	18MTE62	Thin films, coatings and applications	PE	3	3	0	0	3
3.	18MTE63	Aerospace materials	PE	3	3	0	0	3
4.	18MTE64	Modeling and simulation in material processes	PE	3	3	0	0	3
5.	18MTE65	Nuclear materials	PE	3	3	0	0	3

OPEN ELECTIVE COURSES (OEC) – Courses offered to other departments

S.NO	COURSE CODE	COURSE TITLE	CATEGORY	CONTACT PERIODS	L	T	P	C
1.	18MTOE01	Foundry and Welding Technology	OE	3	3	0	0	3
2.	18MTOE02	Surface Engineering	OE	3	3	0	0	3
3.	18MTOE03	Design and Selection of Materials	OE	3	3	0	0	3
4.	18MTOE04	Nano science and Technology	OE	3	3	0	0	3