ACADEMIC CURRICULA

POST GRADUATE DEGREE PROGRAMMES

Master of Technology

(Choice Based Flexible Credit System)

Regulations 2021

Volume – 21 Curriculum

SRM INSTITUTE OF SCIENCE & TECHNOLOGY
(Deemed to be University u/s 3 of UGC Act, 1956)

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Kattankulathur, Chengalpattu District 603203,

Tamil Nadu, India

7. M.Tech in Chemical Engineering

7. (a) Department Vision Statement

Stmt - 1	*To utilize Chemical Engineering and Technology and ensure overall socio-economic growth, welfare, and progress of Indian society and the World-at-large by supporting Academia, Industries through Research and Development, Consultancy and graduating high-quality Chemicals Engineers*

7. (b) Department Mission Statement

Stmt - 1	*To facilitate high-quality education, well grounded in the fundamental and applied areas of engineering necessary for learners to contribute effectively to chemical and allied industries*
Stmt - 2	*To educate, prepare, inspire and mentor learners with the technical and professional skill-set necessary to excel as professionals, grow in their careers and contribute to chemical engineering science and technology*
Stmt - 3	*To inculcate social responsibility in learners and train them to contribute effectively to science and society*

7. (c) Program Education Objectives (PEO)

PEO - 1	
PEO - 2	*To impart a significantly higher level of technical knowledge than in undergraduate so that they appreciate the technological aspects of Chemical Engineering and create opportunities in advanced topics of the field of study.*
PEO - 3	*To prepare students with skill sets and values that meets the varied needs of industries, research and academic organizations.*
PEO - 4	*To enhance their capabilities in experimental research works, analytical skills, interpretation of scientific data and converting these into technical reports.*
PEO - 5	*To enable the graduates to create and work in an atmosphere where learning, research and technical competence co-exists.*

7. (d) Consistency of PEO's with Mission of the Department

	Mission Stmt. - 1	Mission Stmt. - 2	Mission Stmt. - 3
PEO - 1			
PEO - 2			
PEO - 3			
PEO - 4			
PEO - 5			

7. (e) PO – Program Outcomes

PO - 1	*An ability to independently carry out research /investigation and development work to solve practical problems.*
PO - 2	*An ability to write and present a substantial technical report/document.*
PO - 3	*Students should be able to demonstrate a degree of mastery over the area as per the specialization of the program. The mastery should be at a level higher than the requirements in the appropriate bachelor program.*

7. (f) Consistency of PEO's with Program Outcomes (PO)

	Program Outcomes (PO)		
	1	2	3
PEO - 1			
PEO - 2			
PEO - 3			
PEO - 4			
PEO - 5			

3 – High Correlation, 2 – Medium Correlation, 1 – Low Correlation

7. (g) Programme Structure: M.Tech in Chemical Engineering

Professional Core Courses (C)

Course Code	Course Title	Hours/ Week L	T	P	C
21CHC501J	Computational Transport Phenomena	3	0	2	4
21CHC502J [2]	Computer-Aided Process Plant Simulation	3	0	2	4
21CHC503J	Advanced Chemical Reaction Engineering	3	0	2	4
21CHC504J [2]	Process Automation and Control	3	0	2	4
21CHC505T	Process Integration and Intensification	3	0	0	3
21IPC501J [2]	Research Methodology	2	1	2	4
21CHC601T [1]	Case Studies	3	0	0	3
Total Credits					**26**

Project Work, Internship In Industry / Higher Technical Institutions (P)

Course Code	Course Title	Hours/ Week L	T	P	C
21CHP501L	Specialization Project	0	0	40	20
	(OR)				
21CHP502L	Specialization Project	0	0	30	15
21CHP503L	Domain Internship	0	0	10	5
Total Credits					**20**

Course Delivery by online mode ([3])

Course Code	Course Title	Hours/ Week L	T	P	C
21CHE551T [3]	Green Technology	3	0	0	3
21CHE559T [3]	Biomass Conversion and Bio-Refinery	3	0	0	3
21CHE561T [3]	Cleaner Technologies and Sustainability	3	0	0	3
21CHE563T [3]	Colloids and Surfaces	3	0	0	3

Assessment by Open Book Examination ([2])

Course Code	Course Title	Hours/ Week L	T	P	C
21CHC502J [2]	Computer-Aided Process Plant Simulation	3	0	2	4
21CHC504J [2]	Process Automation and Control	3	0	2	4
21CHE555T [2]	Artificial Intelligence in Process Engineering	3	0	0	3
21IPC501J [2]	Research Methodology	2	1	2	4

Professional Elective Courses (E)
Any 7 Courses

Course Code	Course Title	Hours/ Week L	T	P	C
21CHE551T [3]	Green Technology	3	0	0	3
21CHE556T	Strategies for CO_2 Utilization	3	0	0	
21CHE553T	Advanced Thermodynamics	3	0	0	3
21CHE557T	Modern Separation Processes	3	0	0	
21CHE552T	Data Science in Chemical Engineering	3	0	0	3
21CHE554T	Chemical Process Optimization	3	0	0	
21CHE555T [2]	Artificial Intelligence in Process Engineering	3	0	0	3
21CHE559T [3]	Biomass Conversion and Bio-Refinery	3	0	0	
21CHE558T	Fluidization Engineering	3	0	0	3
21CHE565T	Biomaterials and Drug Delivery Systems	3	0	0	
21CHE561T [3]	Cleaner Technologies and Sustainability	3	0	0	3
21CHE562T	Nanoscience and Nanotechnology	3	0	0	
21CHE600T [1]	Journal Publication	0	0	0	
21CHE564T	Interfacial Science and Engineering	3	0	0	
21CHE560T	Advanced Biochemical Engineering	3	0	0	3
21CHE563T [3]	Colloids and Surfaces	3	0	0	
Total Credits					**21**

4. Open Elective Courses (O)

Course Code	Course Title	Hours/ Week L	T	P	C
21CHO601T	Smart Waste Management	3	0	0	3
21CHO602T	Desalination and Water Treatment	3	0	0	3
21CHO603T	Process Safety	3	0	0	3
21CHO604T	Analytical Techniques in Process Engineering	3	0	0	3
Total Credits					**3**

100% assessment by the Department ([1])

Course Code	Course Title	Hours/ Week L	T	P	C
21CHC601T [1]	Case Studies	3	0	0	3
21CHE600T [1]	Journal Publication	0	0	0	3

All elective courses may be studied under MOOC platform

[1] 100% assessment by the Department

[2] Assessment by Open Book Examination

[3] Course Delivery through online mode

7. (h) Implementation Plan: M.Tech in Chemical Engineering

Semester - I					
Code	Course Title	Hours/ Week			
		L	T	P	C
21CHC501J	Computational Transport Phenomena	3	0	2	4
21CHC502J [2]	Computer-Aided Process Plant Simulation	3	0	2	4
21CHC503J	Advanced Chemical Reaction Engineering	3	0	2	4
21IPC501J [2]	Research Methodology	2	1	2	4
21CHE551T [3]	Green Technology	3	0	0	3
21CHE556T	Strategies for CO_2 Utilization	3	0	0	
	Total Credits				**19**

Semester - II					
Code	Course Title	Hours/ Week			
		L	T	P	C
21CHC504J [2]	Process Automation and Control	3	0	2	4
21CHC505T	Process Integration and Intensification	3	0	0	3
21CHE553T	Advanced Thermodynamics	3	0	0	3
21CHE557T	Modern Separation Processes	3	0	0	
21CHE552T	Data Science in Chemical Engineering	3	0	0	3
21CHE554T	Chemical Process Optimization	3	0	0	
21CHE555T [2]	Artificial Intelligence in Process Engineering	3	0	0	3
21CHE559T [3]	Biomass Conversion and Bio-Refinery	3	0	0	
	Total Credits				**16**

Semester - III					
Code	Course Title	Hours/ Week			
		L	T	P	C
	Open Elective	3	0	0	3
21CHE558T	Fluidization Engineering	3	0	0	3
21CHE565T	Biomaterials and Drug Delivery Systems	3	0	0	
21CHE561T [3]	Cleaner Technologies and Sustainability	3	0	0	
21CHE562T	Nanoscience and Nanotechnology	3	0	0	3
21CHE600T [1]	Journal Publication	0	0	0	
21CHE564T	Interfacial Science and Engineering	3	0	0	
21CHE560T	Advanced Biochemical Engineering	3	0	0	3
21CHE563T [3]	Colloids and surfaces	3	0	0	
21CHC601T [1]	Case Studies	3	0	0	3
	Total Credits				**15**

Semester - IV					
Code	Course Title	Hours/ Week			
		L	T	P	C
21CHP501L	Specialization Project	0	0	40	20
	(OR)				
21CHP502L	Specialization Project	0	0	30	15
21CHP503L	Domain Internship	0	0	10	5
	Total Credits				**20**

 # Students must register either 21CHP501L or 21CHP502L and 21CHP503L both in fourth semester

7. (i) Program Articulation Matrix: M.Tech in Chemical Engineering

Course Code	Course Name	Programme Outcomes		
		1	2	3
21CHC501J	Computational Transport Phenomena			
21CHC502J	Computer-Aided Process Plant Simulation			
21CHC503J	Advanced Chemical Reaction Engineering			
21CHC504J	Process Automation and Control			
21CHC505T	Process Integration and Intensification			
21CHC601T	Case Studies			
21CHE551T	Green Technology			
21CHE552T	Data Science in Chemical Engineering			
21CHE553T	Advanced Thermodynamics			
21CHE554T	Chemical Process Optimization			
21CHE555T	Artificial Intelligence in Process Engineering			
21CHE556T	Strategies for CO_2 utilization			
21CHE557T	Modern Separation Processes			
21CHE558T	Fluidization Engineering			
21CHE559T	Biomass Conversion and Bio-refinery			
21CHE560T	Advanced Biochemical Engineering			
21CHE561T	Cleaner technologies and Sustainability			
21CHE562T	Nanoscience and Nanotechnology			
21CHE563T	Colloids and Surfaces			
21CHE564T	Interfacial Science and Engineering			
21CHE565T	Biomaterials and Drug Delivery Systems			
21CHE600T	Journal Publication			
21IPC501J	Research Methodology	3	2.6	
	Open Elective			
21CHP501L	Specialization Project			
21CHP502L	Specialization Project			
21CHP503L	Domain Internship			
	Program Average			

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