

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)

SRM INSTITUTE OF SCIENCE AND TECHNOLOGY

(Deemed to be University u/s 3 of UGC Act, 1956)

Kattankulathur, Chengalpattu District 603203,

Tamil Nadu, India

37 M.Tech in Genetic Engineering

37. (a) Department Vision Statement

Stmnt - 1	<i>To emerge as a center of excellence in Genetic Engineering and to provide research oriented holistic learning experience that enables the graduates to blossom into intellectually capable, professionally committed and socially responsible individuals.</i>
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37. (b) Department Mission Statement

Stmnt - 1	<i>Built-in mechanism to inculcate professional commitment, ethical values and social responsibility.</i>
Stmnt - 2	<i>Designing continually evolving curriculum with emphasis on research-oriented learning and creative thinking towards basic and applied sciences.</i>
Stmnt - 3	<i>Attracting faculty, students and scholars with strong desire for research and providing them with an inspiring research environment to excel in thrust areas of the department.</i>

37. (c) Program Education Objectives (PEO)

PEO - 1	<i>Engage in teaching and research as faculty in academic institutions in India and abroad.</i>
PEO - 2	<i>Work as scientists/research associates/project leaders in research institutions, R&D labs of life science companies, hospitals, and diagnostic centers in India and abroad.</i>
PEO - 3	<i>Pursue PhD or to acquire jobs in India and abroad in the related fields.</i>
PEO - 4	<i>Establish their own companies in life science related fields as entrepreneurs.</i>
PEO - 5	<i>Pursue career as management professional in life science related companies.</i>

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

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

37. (e) PO – Program Outcomes

PO - 1	<i>An ability to independently carry out research /investigation and development work to solve practical problems.</i>
PO - 2	<i>An ability to write and present a substantial technical report/document.</i>
PO - 3	<i>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.</i>

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

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

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

37. (g) Programme Structure: M.Tech Genetic Engineering

Professional Core Courses (C)							Professional Elective Courses (E) (Any 7 Courses)						
Course Code	Course Title	Hours/Week			C		Course Code	Course Title	Hours/Week			C	
		L	T	P					L	T	P		
21GEC501J	Molecular Techniques	3	0	2	4		21GEE501T	Human Physiology	3	0	0	3	
21GEC502T	Molecular Biology of Gene	3	0	0	3		21GEE502T	Molecular Immunology	3	0	0		
21GEC503J	Molecular Cloning	3	0	2	4		21GEE503J ²	Cancer Genetics	2	0	2	3	
21GEC504J	Genomics: Methods and Analysis	3	0	2	4		21GEE504J	Plant Genetic Engineering	2	0	2		
21GEC505J	Regulation of Gene Expression	3	0	2	4		21GEE507T	Human Genetics	3	0	0		
21IPC501J ²	Research Methodology	2	1	2	4		21GEE508T	Functional Genomics in the Modern Era	3	0	0	3	
21GEC601T ¹	Case Studies	3	0	0	3		21GEE505T	Molecular Pathogenesis of Infectious Diseases	3	0	0		
Total Credits						26	21GEE506T	Genetic Engineering for Industrial Applications	3	0	0	3	
							21GEE602T	Neurogenetics	3	0	0	3	
							21GEE605J	Developmental Genetics	2	0	2		
							21GEE603T	Stem Cell Biology	3	0	0		
							21GEE604T	Genetics of Diseases and Disorders	3	0	0	3	
							21GEE600T ¹	Journal Publication	0	0	0		
							21GEE601T	Modern Biotechnology of Crop Improvement	3	0	0	3	
							21GEE606T	Genetic Counselling	3	0	0		
							Total Credits						21
Project Work, Internship In Industry / Higher Technical Institutions (P)							Open Elective Courses (O)						
Course Code	Course Title	Hours/Week			C		Course Code	Course Title	Hours/Week			C	
		L	T	P					L	T	P		
21GEP501L	Specialization Project	0	0	40	20		21GEO602T	Computational Biology and Systems Biology	3	0	0	3	
(OR)							Total Credits						3
21GEP502L	Specialization Project	0	0	30	15								
21GEP503L	Domain Internship	0	0	10	5								
Total Credits						20							
Assessment by Open Book Examination (²)													
Course Code	Course Title	Hours/Week			C								
		L	T	P									
21GEE503J ²	Cancer Genetics	2	0	2	3								
21IPC501J ²	Research Methodology	2	1	2	4								
Total Credits						15							
100% assessment by the Department (¹)													
Course Code	Course Title	Hours/Week			C								
		L	T	P									
21GEC601T ¹	Case Studies	3	0	0	3								
21GEE600T ¹	Journal Publication	0	0	0	3								
Total Credits						9							

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

37. (h) Implementation Plan: M.Tech Genetic Engineering

Semester - I						Semester - II					
Code	Course Title	Hours/Week				Code	Course Title	Hours/Week			
		L	T	P	C			L	T	P	C
21GEC501J	Molecular Techniques	3	0	2	4	21GEC504J	Genomics: Methods and Analysis	3	0	2	4
21GEC502T	Molecular Biology of Gene	3	0	0	3	21GEC505J	Regulation of Gene Expression	3	0	2	4
21GEC503J	Molecular Cloning	3	0	2	4	21GEE503J ²	Cancer Genetics	2	0	2	3
21IPC501J ²	Research Methodology	2	1	2	4	21GEE504J	Plant Genetic Engineering	2	0	2	
21GEE501T	Human Physiology	3	0	0	3	21GEE507T	Human Genetics	3	0	0	3
21GEE502T	Molecular Immunology	3	0	0		21GEE508T	Functional Genomics in the Modern Era	3	0	0	
Total Credits					18	21GEE505T	Molecular Pathogenesis of Infectious Diseases	3	0	0	3
						21GEE506T	Genetic Engineering for Industrial Applications	3	0	0	
						Total Credits					17
Semester - III						Semester - IV					
Code	Course Title	Hours/Week				Code	Course Title	Hours/Week			
		L	T	P	C			L	T	P	C
	Open Elective	3	0	0	3	21GEP501L	Specialization Project (OR)	0	0	40	20
21GEE602T	Neurogenetics	3	0	0	3	21GEP502L	Specialization Project	0	0	30	15
21GEE605J	Developmental Genetics	2	0	2		21GEP503L	Domain Internship	0	0	10	5
21GEE603T	Stem Cell Biology	3	0	0	3	Total Credits					20
21GEE604T	Genetics of Diseases and Disorders	3	0	0							
21GEE600T ¹	Journal Publication	0	0	0	3						
21GEE601T	Modern Biotechnology of Crop Improvement	3	0	0							
21GEE606T	Genetic Counselling	3	0	0	3						
21GEC601T ¹	Case Studies	3	0	0							
Total Credits					15						

Students must register either 21GEP501L or 21GEP502L and 21GEP503L both in fourth semester

37. (i) Program Articulation Matrix: M.Tech Genetic Engineering

Course Code	Course Name	Programme Outcomes		
		1	2	3
21GEC501J	Molecular Techniques	2.5	2	2.33
21GEC502T	Molecular Biology of Gene	3	3	2
21GEC503J	Molecular Cloning	3	3	2
21GEC504J	Genomics: Methods and Analysis	2.4	2	2.33
21GEC505J	Regulation of Gene Expression	2.75	2.5	2.33
21GEC601T	Case Studies			
21GEE501T	Human Physiology	2.5	2.25	3
21GEE502T	Molecular Immunology	3	2	2
21GEE503J	Cancer Genetics	3	2.6	2
21GEE504J	Plant Genetic Engineering	3	2	3
21GEE505T	Molecular Pathogenesis of Infectious Diseases	2.75	2.8	2
21GEE506T	Genetic Engineering for Industrial applications	2.25	2	2.67
21GEE507T	Human Genetics	3	1.75	1.5
21GEE508T	Functional Genomics in the Modern Era	2.33	0	2.33
21GEE601T	Modern Biotechnology of Crop Improvement	3	2	3
21GEE602T	Neurogenetics	3	2	2
21GEE603T	Stem Cell Biology	2	2	2.5
21GEE604T	Genetics of diseases and disorders	2.33	2	2.66
21GEE605T	Developmental Genetics	3	2.5	3
21GEE606T	Genetic Counselling	2.33	2	2.25
21GEE600T	Journal Publication			
21IPC501J	Research Methodology	3	2.6	
	Open Elective			
21GEP501L	Specialization Project			
21GEP502L	Specialization Project			
21GEP503L	Domain Internship			
Program Average				



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