

**COMSATS University Islamabad**  
**Registrar Secretariate, Academic Unit (PS)**

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No: CUI-Reg/Notif-1922 /24/1991

August 23, 2024

**NOTIFICATION**

The Academic Council in its 39<sup>th</sup> meeting held on August 1, 2024 based on the recommendations of the Board of Advanced Studies and Research in its 35<sup>th</sup> meeting held on June 25, 2024, approved the Scheme of Studies of Master of Science in Process Systems Engineering, effective from Fall 2024.

Nomenclature of Degree: **Master of Science in Process Systems Engineering**

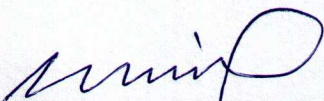
- I. Minimum Duration: 02 Years      II. Minimum Semesters: 04  
III. Maximum Duration: 04 Years      IV. Maximum Semesters: 08

**No. of Courses and Credit Hours:**

S #	Category	SAME / RELEVANT DISCIPLINE		INTRADISCIPLINARY	
		No. of Courses	No. of Credit Hours	No. of Courses	No. of Credit Hours
1.	Deficiency Courses of level 6	-	-	02-03	06-09
2.	Core Courses	04	12	04	12
3.	Elective Courses	04	12	04	12
4.	Research Thesis	01	06	01	06
5.	Prerequisite	<i>The zero semester of an MS candidate shall not count towards the maximum study duration.</i>			
6.	<b>Total (Minimum)</b>	09	30	11-12	36-39

- MS WITH NON-THESIS OPTION IN THE SAME DISCIPLINE / RELEVANT FIELD:** By selecting the MS with Non-Thesis option, a same/relevant discipline student can graduate by passing, in lieu of MS thesis, 02 additional elective courses and submitting a Non-Credit (NC) MS Project/Report. In such case, the course work consists of 11 courses (02 core courses, 08 electives, and 01 NC Project Report) accumulating in total 30 Credit Hours of course work.
- MS WITH NON-THESIS OPTION IN THE INTRADISCIPLINARY FIELD:** By selecting the MS with Non-Thesis option, an intradisciplinary student can graduate by passing 02-03 deficiency courses in the zero semester and then passing in subsequent semesters, in lieu of MS thesis, 02 additional elective courses and submitting a Non-Credit (NC) MS Project/Report. In such case, the course work consists of 13-14 courses (02-03 deficiency courses, 02 core courses, 08 electives, and 01 NC Project Report) accumulating in total 36-39 Credit Hours of course work.
- MS students can enroll only in courses numbered 600-700, except the MS Thesis 800.
- For MS programs, If the number of core courses exceeds 2, the number of elective courses will decrease accordingly. For instance, a program with 3 core courses will have 5 elective courses to fulfill the required 24 credit hours of coursework.
- PhD students can take courses numbered 700-800, except the PhD dissertation 900.
- If a PhD program has more than 1 core course, elective course numbers will decrease accordingly. For instance, with 2 core courses, there would be 4 electives to meet the 18-credit hour requirement.
- Furthermore, courses completed during the MS program will not count towards the PhD program's requirements, preventing any duplication or repetition of coursework.

This issues with approval of the competent authority (Rector CUI).

  
**Dr. Muhammad Hanif (Ph.D)**  
Deputy Registrar

**Encl: (Total 17 Pages)**

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**CC:**

8. SO, to the Rector
9. PS to the Registrar

1. List of Core Courses for Master of Science in Process Systems Engineering :

Serial No.	Old Code	New Code	Course Title upto Spring 2024	New Course Title from Fall 2024	Credits Hours	Pre-requisites
1.		PSE601		Advanced Process Systems Engineering	3(3, 0)	
2.		PSE610		Advanced Process Control	3(3, 0)	
3.		PSE702		Process Integration	3(3, 0)	
4.		PSE720		Process Design and Optimization	3(3, 0)	

1. List of Graduate Courses of the Department of Chemical Engineering for Master of Science in Process Systems Engineering :

a. MS students are allowed to enroll in any four courses from the following list.

Sr. #	Old Code	New Course Code	Course Title upto Spring 2024	New Course Title from Fall 2024	Credit Hours	Pre Requisite
1.		PSE550		Fundamentals of Process Systems Engineering	3(3, 0)	
2.		PSE560		Fundamentals of Computational Process Engineering	3(3, 0)	
3.		CHE601		Instrumental Analytical Techniques	3(3, 0)	
4.		CHE602		Advanced Chemical Kinetics & Reaction Engineering	3(3, 0)	
5.		CHE603		Advanced Chemical Engineering Thermodynamics	3(3, 0)	
6.		CHE606		Engineering Research Methods	3(3, 0)	
7.		CHE604		Advanced Transport Phenomena	3(3, 0)	
8.		CHE605		Advanced Numerical and Statistical Analysis	3(3, 0)	
9.		CHE610		Petroleum Fluids	3(3, 0)	
10.		CHE611		Combustion Engineering	3(3, 0)	
11.		CHE620		Life Cycle Analysis	3(3, 0)	
12.		CHE621		Industrial Environmental Biotechnology	3(3, 0)	
13.		CHE630		Advanced Biochemical Engineering	3(3, 0)	
14.		CHE631		Bio-Chemical and Food Technology	3(3, 0)	
15.		CHE632		Biotechnology and Environmental Processes	3(3, 0)	
16.		CHE640		Industrial Polymer Chemistry	3(3, 0)	
17.		CHE641		Rubber and Plastics Materials	3(3, 0)	
18.		CHE642		Composite Materials	3(3, 0)	
19.		CHE643		Polymer Physics	3(3, 0)	
20.		CHE644		Colloid and Surfactant Science	3(3, 0)	

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Sr. #	Old Code	New Course Code	Course Title upto Spring 2024	New Course Title from Fall 2024	Credit Hours	Pre Requisite
21.		CHE645		Polymer Testing	3(3, 0)	
22.		CHE646		Plastic Technology	3(3, 0)	
23.		CHE650		Technology of Textile Wet Processing	3(3, 0)	
24.		CHE651		Technical Textiles	3(3, 0)	
25.		CHE652		Pre-Chemical Treatment Processes of Textile	3(3, 0)	
26.		CHE653		Processes for Cotton Dyeing	3(3, 0)	
27.		CHE654		Textile Printing	3(3, 0)	
28.		CHE678		Plasma Chemical Engineering	3(3, 0)	
29.		CHE700		Advanced Treatment of Simultaneous Heat and Mass Transfer	3(3, 0)	
30.		CHE701		Computational Fluid Dynamics	3(3, 0)	
31.		CHE702		Advanced Catalytic Processes	3(3, 0)	
32.		CHE703		Fluidization Engineering	3(3, 0)	
33.		CHE704		Novel Separations	3(3, 0)	
34.		CHE710		Oil and Gas Economics	3(3, 0)	
35.		CHE711		Surface Petroleum Operations	3(3, 0)	
36.		CHE712		Petroleum Transmission	3(3, 0)	
37.		CHE713		Natural Gas Transmission	3(3, 0)	
38.		CHE720		Chemicals Emission and Control	3(3, 0)	
39.		CHE721		Fate and Transport of Chemical in Environment	3(3, 0)	
40.		CHE722		Industrial Environmental Microbiology	3(3, 0)	
41.		CHE723		Industrial Environmental Chemistry	3(3, 0)	
42.		CHE724		Hazardous and Toxic Chemical Waste Treatment	3(3, 0)	
43.		CHE725		Bioremediation of Toxic Chemicals	3(3, 0)	
44.		CHE726		Solid Waste Engineering	3(3, 0)	
45.		CHE730		Bio-Reaction Engineering	3(3, 0)	
46.		CHE731		Bio-Process Design	3(3, 0)	
47.		CHE732		Production of Biofuels	3(3, 0)	
48.		CHE733		Metabolic and Cell Engineering	3(3, 0)	
49.		CHE734		Manufacturing Practices for Bioprocesses	3(3, 0)	
50.		CHE740		Polymer Rheology	3(3, 0)	
51.		CHE741		Principles of Polymer Conversion Operations	3(3, 0)	
52.		CHE742		Polymer Membranes	3(3, 0)	
53.		CHE743		Sol-Gel Processing	3(3, 0)	
54.		CHE744		Membrane Science & Technology	3(3, 0)	
55.		CHE750		Textile Quality Assurance	3(3, 0)	

Sr. #	Old Code	New Course Code	Course Title upto Spring 2024	New Course Title from Fall 2024	Credit Hours	Pre Requisite
56.		CHE751		Mechanics of Textiles	3(3, 0)	
57.		CHE752		Advanced Yarn Engineering	3(3, 0)	
58.		CHE753		Fiber Forming Polymers	3(3, 0)	
59.		CHE754		Fiber Engineering Science	3(3, 0)	
60.		PSE651		Advanced Process Economics	3(3, 0)	
61.		PSE731		Process Modeling and Simulation	3(3, 0)	
62.		PSE732		Artificial Neural Network	3(3, 0)	
63.	CHE665	PSE740	Sustainable Energy Systems	Sustainable Energy Systems	3(3, 0)	
64.		PSE741		PINCH Technology	3(3, 0)	
65.		PSE742		Energy Audit and Management	3(3, 0)	
66.		ENE611		Nanotechnology and Energy	3(3, 0)	
67.		ENE613		Renewable Energy Technologies	3(3, 0)	
68.		ENE621		Air Pollution Control	3(3, 0)	
69.		ENE622		Water and Wastewater Treatment	3(3, 0)	
70.		ENE612		Clean Coal Technologies	3(3, 0)	
71.		ENE623		Solid Waste Management	3(3, 0)	
72.		ENE624		Environmental Pollution Control	3(3, 0)	
73.		ENE714		Advanced Energy Engineering	3(3, 0)	
74.		ENE715		Waste to Energy	3(3, 0)	
75.		ENE731		Energy and Environmental Policies	3(3, 0)	
76.		ENE732		Special Topics in Energy and Environment	3(3, 0)	
77.		MME611		Nano-materials	3(3, 0)	
78.		MME616		Advanced Materials Science	3(3, 0)	
79.		MME641		Surface Engineering	3(3, 0)	
80.		MME651		Corrosion Engineering	3(3, 0)	
81.		MME612		Fracture, Creep, and Fatigue of Materials	3(3, 0)	
82.		MME613		Metals and Alloys	3(3, 0)	
83.		MME614		Thin Film Processing and Characterization	3(3, 0)	
84.		MME615		Advanced Ceramics and Composites	3(3, 0)	
85.		MME617		Superalloys and High Performance Materials	3(3, 0)	
86.		MME618		Product Design and Development	3(3, 0)	
87.		MME619		Materials for Sensors and Electronics	3(3, 0)	
88.		MME621		Materials for Solar Energy	3(3, 0)	
89.		MME622		Materials for Energy and Environment	3(3, 0)	
90.		MME631		Biological Materials	3(3, 0)	

Sr. #	Old Code	New Course Code	Course Title upto Spring 2024	New Course Title from Fall 2024	Credit Hours	Pre Requisite
91.		MME661		Special Topics in Materials Engineering	3(3, 0)	
92.		PST611		Fundamental of Polymer Science and Technology	3(3, 0)	
93.		PST621		Polymer Processing Technologies	3(3, 0)	
94.		PST651		Characterization and Testing of Polymeric Materials	3(3, 0)	
95.		PST671		Environment Impacts of Plastics and Recycling Technologies	3(3, 0)	
96.		PST622		Elastomers Technology	3(3, 0)	
97.		PST623		Polymer Blends and Composites	3(3, 0)	
98.		PST629		Polymer Textile Fibers	3(3, 0)	
99.		PST631		Polymer Chemistry	3(3, 0)	
100.		PST641		Engineering Behavior of Polymers	3(3, 0)	
101.		PST653		Polymeric Coatings	3(3, 0)	
102.		PST655		Special Topics in Polymer Science and Technology	3(3, 0)	
103.		PST661		Polymeric Biomaterials	3(3, 0)	
104.		PST724		Polymer Process Machinery Technology	3(3, 0)	
105.		PST725		Advanced Polymer Processing	3(3, 0)	
106.		PST726		Plastic Products Manufacturing	3(3, 0)	
107.		PST732		Advanced Polymer Synthesis and Processes	3(3, 0)	
108.		PST733		Polymer Reaction Technology	3(3, 0)	
109.		PST752		Advanced Polymer Characterization	3(3, 0)	
110.		PST754		Polymers Surfaces and Interfaces	3(3, 0)	
111.		PST762		Emulsion Polymers	3(3, 0)	
112.		ENV753		Climate Change and Global Politics	3(3, 0)	
113.		ENV751		International Environmental Governance	3(3, 0)	
114.		ENV605		Environmental Impact assessment	3(3, 0)	
115.		ENV606		Environmental Policies, Planning and Laws	3(3, 0)	
116.		ENV622		Waste Water Treatment	3(3, 0)	
117.		CSC762		Advanced Topics in Neural Networks	3(3, 0)	

## 2. MS Thesis

1.		PSE800		MS Thesis	6(0, 6)	
2.		PSE600		MS Project/Report	0(0, 0)	