

**SCHEME OF STUDIES FOR BACHELOR OF INDUSTRIAL
ENGINEERING CURRICULUM FOR INTAKE YEAR 2025 AND
ONWARDS (AI AND SMART MANUFACTURING STREAM)**

1st Year				
First Semester				
Sr. No	Course Title	(Credit Hours)		Total Credit Hours
		Theory	Lab	
1	Functional English	3	0	3
2	Calculus and Analytical Geometry	3	0	3
3	Applications of ICT	2	1	3
4	Basic Electronics	2	1	3
5	Engineering Drawing and Graphics	0	2	2
6	Engineering Mechanics	2	1	3
	Total	12	5	17

Second Semester				
Sr. No	Course Title	(Credit Hours)		Total Credit Hours
		Theory	Lab	
1	Linear Algebra and Differential Equations	3	0	3
2	Workshop Practice	0	1	1
3	Ideology and Constitution of Pakistan	2	0	2
4	Basic Mechanical Engineering	2	1	3
5	Materials Engineering	3	1	4
6	Islamic Studies/Ethics	2	0	2
7	Computer Aided Design	0	1	1
	Total	12	4	16

2 nd Year				
Third Semester				
Sr. No	Course Title	(Credit Hours)		Total Credit Hours
		Theory	Lab	
1	Probability and Statistics	3	0	3
2	Arts and Humanities Elective *	2	0	2
3	Social Sciences Elective **	2	0	2
4	Health, Safety & Environment	2	0	2
5	Mechanics of Materials	2	1	3
6	Numerical Analysis & Computer Application	2	1	3
7	Computer Programming	2	1	3
Total		15	3	18

Fourth Semester				
Sr. No	Course Title	(Credit Hours)		Total Credit Hours
		Theory	Lab	
1	Logic & Critical Thinking	3	0	3
2	Design of Mechanisms	2	1	3
3	Manufacturing Systems	2	1	3
4	Metrology & Statistical Quality Control	2	1	3
5	Computer Simulation	2	1	3
6	Environment and Sustainability	2	0	2
Total		13	4	17

3 rd Year				
Fifth Semester				
Sr. No	Course Title	(Credit Hours)		Total Credit Hours
		Theory	Lab	
1	Civics and Community Engagement	2	0	2
2	Production Planning & Control	2	1	3
3	Manufacturing Process	2	1	3
4	Operations Research	3	1	4
5	Work Study & Methods Engineering	2	1	3
6	Project Management	2	0	2
Total		13	4	17

Sixth Semester				
Sr. No	Course Title	(Credit Hours)		Total Credit Hours
		Theory	Lab	
1	Industrial Facilities Design	2	1	3
2	Human Factors Engineering	2	1	3
3	Expository Writing	3	0	3
4	Computer Aided Manufacturing	2	1	3
5	Instrumentation and Control	2	1	3
6	Management Sciences Elective****	2	0	2
Total		13	4	17

4 th Year				
Seventh Semester				
Sr. No	Course Title	(Credit Hours)		Total Credit Hours
		Theory	Lab	
1	Design of Experiment	3	1	4
2	Industrial Repair and Maintenance	2	1	3
3	Technical Elective – I ***	3	0	3
4	Technical Elective – II ***	3	0	3
5	FYDP (Part-I)	0	3	3
Total		11	5	16

Eighth Semester				
Sr. No	Course Title	(Credit Hours)		Total Credit Hours
		Theory	Lab	
1	Entrepreneurship	2	0	2
2	Technical Elective – III ***	2/3	1/0	3
3	Technical Elective – IV ***	2/3	1/0	3
4	Technical Elective -V ***	2/3	1/0	3
5	FYDP (Part-II)	0	3	3
6	Production/ Industrial Automation	2	1	3
Total		10/13	7/4	17

* List of Arts and Humanities Electives (2+0)	** List of Social Science Electives (2+0)
<ul style="list-style-type: none"> • Communication and Presentation Skills • Beginners Spanish • Elementary Arabic • Elementary French • Elementary Chinese • History • Philosophy • Professional Ethics • Any other relevant course/ language decided by the HEI as per requirement. 	<ul style="list-style-type: none"> • Sociology for Engineers • Sociology • Social Psychology • Critical Thinking • Human Resource Management • Organizational Behavior • Engineering Law • Engineering Economics • Applied Psychology • Engineering Management • Financial Management • Marketing Management • Leadership and Personal Grooming • Any other relevant course decided by the HEI as per requirement.

*** List of Technical Electives (2+1 or 3+0)	
<ul style="list-style-type: none"> • Lean Manufacturing • Quality Engineering • Virtual Reality • Smart Manufacturing and Industry 4.0 • Finite Element Analysis • Sustainable Manufacturing • Reliability Analysis • Metal Forming and Cutting Analysis • Computer Integrated Manufacturing (CIM) • Tool and Die Design • Logistic Management • Enterprise Resource Planning • Additive Manufacturing • Human Robot Interaction 	<ul style="list-style-type: none"> • Warehouse Management • Computer Aided Process Planning • Applications of AI in Manufacturing and Services Sector • Advanced Manufacturing Processes • Cybersecurity for Industrial Control Systems • Data Analytics for Industrial Engineers • Advanced Engineering Optimization • Introduction to Thermal Fluid • Soft Computing & Data Mining • Lean Six Sigma • Mechanics of Machine • Any other relevant course decided by the HEI as per requirement.

**** List of Electives for Management Sciences Course (2+0)
<ul style="list-style-type: none"> • Managerial Accounting • Total Quality Management • Management of Technical Organization • Supply Chain Management • Any other relevant course decided by the HEI as per requirement.