

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

<b>1<sup>st</sup> Year</b>				
<b>First Semester</b>				
<b>Sr. No</b>	<b>Course Title</b>	<b>(Credit Hours)</b>		<b>Total Credit Hours</b>
		<b>Theory</b>	<b>Lab</b>	
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
	<b>Total</b>	<b>12</b>	<b>5</b>	<b>17</b>

<b>Second Semester</b>				
<b>Sr. No</b>	<b>Course Title</b>	<b>(Credit Hours)</b>		<b>Total Credit Hours</b>
		<b>Theory</b>	<b>Lab</b>	
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
	<b>Total</b>	<b>12</b>	<b>4</b>	<b>16</b>

<b>2<sup>nd</sup> Year</b>				
<b>Third Semester</b>				
<b>Sr. No</b>	<b>Course Title</b>	<b>(Credit Hours)</b>		<b>Total Credit Hours</b>
		<b>Theory</b>	<b>Lab</b>	
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
<b>Total</b>		<b>15</b>	<b>3</b>	<b>18</b>

<b>Fourth Semester</b>				
<b>Sr. No</b>	<b>Course Title</b>	<b>(Credit Hours)</b>		<b>Total Credit Hours</b>
		<b>Theory</b>	<b>Lab</b>	
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
<b>Total</b>		<b>13</b>	<b>4</b>	<b>17</b>

3 <sup>rd</sup> 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
<b>Total</b>		<b>13</b>	<b>4</b>	<b>17</b>

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
<b>Total</b>		<b>13</b>	<b>4</b>	<b>17</b>

4 <sup>th</sup> 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
<b>Total</b>		<b>11</b>	<b>5</b>	<b>16</b>

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
<b>Total</b>		<b>10/13</b>	<b>7/4</b>	<b>17</b>

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

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

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