

## Course Structure

Paper No	Paper Title	Credits
<b>Semester - I</b>		
<b>General Education Components</b>		
<b>VOC 101</b>	Linguistic Proficiency-I (English& Marathi) with Language lab training	4
<b>VOC 102</b>	Basic Computing	2
<b>VOC 103</b>	UPS Repairing (Theory)	2
<b>VOC 104</b>	UPS Repairing (Practical)	2
<b>VOC 105</b>	Occupational Practice Essentials	2
<b>Skill Development Components - Industrial Automation (A)</b>		
<b>VOC 111</b>	Analog and Digital Electronics	2
<b>VOC 112</b>	Electrical Systems	2
<b>VOC 113</b>	Industrial Electronics	2
<b>VOC 114</b>	Industrial Instrumentation	2
<b>VOC 115</b>	Laboratory Coursework – I (IA)(Analog and Digital Electronics)	2
<b>VOC 116</b>	Laboratory Coursework – II (IA) (Electrical Systems)	2
<b>VOC 117</b>	Laboratory Coursework – III (IA) (Industrial Electronics)	2
<b>VOC 118</b>	Laboratory Coursework – IV (IA) (Industrial Instrumentation)	2
<b>Total Credits = General Education Components + Skill Development Components</b>		12+16= 28
<b>Semester - II</b>		
<b>General Education Components</b>		
<b>VOC 201</b>	Linguistic Proficiency-II(English & Hindi ) with Lang. lab training	4
<b>VOC 202</b>	Computer Fundamentals-II (Basic Computer Hardware System) : Theory	2
<b>VOC 203</b>	Computer Fundamentals-II (Basic Computer Hardware System) : Lab- Course	2
<b>VOC 204</b>	Environment Management	4
<b>Skill Development Components - Industrial Automation (A)</b>		
<b>VOC 211</b>	Interfacing and Signal Conditioning	2
<b>VOC 212</b>	Control Systems Fundamentals	2
<b>VOC 213</b>	Fundamentals of Drives	2
<b>VOC 214</b>	PLC Fundamentals	2
<b>VOC 215</b>	Laboratory Coursework–V (IA)(Interfacing and Signal Conditioning)	2
<b>VOC 216</b>	Laboratory Coursework – VI(IA) (Control Systems Fundamentals)	2
<b>VOC 217</b>	Laboratory Coursework – VII (IA) (Fundamentals of Drives)	2
<b>VOC 218</b>	Laboratory Coursework – VIII (IA) (PLC Fundamentals)	2
<b>VOC 219</b>	In-plant Training – I (IA)	4

<b>Total Credits = General Education Components + Skill Development Components</b>		12+20= 32
<b>Semester – III</b>		
<b>General Education Components</b>		
<b>VOC 301</b>	Linguistic Proficiency-III	4
<b>VOC 302</b>	Business Software Tools –I	4
<b>VOC 303</b>	Statistical Tools (Probability and Statistics)	4
<b>Skill Development Components - Industrial Automation (A)</b>		
<b>VOC 311</b>	Analog and Digital Circuit Design	2
<b>VOC 312</b>	Mechanical Power Transmission	2
<b>VOC 313</b>	Fundamentals of Hydraulics	2
<b>VOC 314</b>	Embedded System Concepts	2
<b>VOC 315</b>	Laboratory Coursework–IX (IA)(Analog and Digital Circuit Design)	2
<b>VOC 316</b>	Laboratory Coursework–X(IA) (Mechanical Power Transmission)	2
<b>VOC 317</b>	Laboratory Coursework – XI (IA) (Fundamentals of Hydraulics)	2
<b>VOC 318</b>	Laboratory Coursework – XII (IA)(Embedded Systems Concepts)	2
<b>Total Credits = General Education Components + Skill Development Components</b>		12+16= 28
<b>Semester – IV</b>		
<b>General Education Components</b>		
<b>VOC 401</b>	Industrial Ethics and Safety Management( for Industrial Automation and Automobile) / Ethical, Legal and Regulatory Aspects of Tourism( for Travel & Tourism )	4
<b>VOC 402</b>	Business Software Tools-II	4
<b>VOC 403</b>	Fundamentals of Business and Accounting	4
<b>Skill Development Components - Industrial Automation (A)</b>		
<b>VOC 411</b>	PLC based Automation	2
<b>VOC 412</b>	Process Control	2
<b>VOC 413</b>	Fundamentals of Pneumatics	2
<b>VOC 414</b>	Embedded System Applications	2
<b>VOC 415</b>	Laboratory Coursework–XIII (IA)( PLC based Automation)	2
<b>VOC 416</b>	Laboratory Coursework–XIV(IA) ( Process Control )	2
<b>VOC 417</b>	Laboratory Coursework – XV (IA) ( Fundamentals of Pneumatics)	2
<b>VOC 418</b>	Laboratory Coursework – XVI(IA)( Embedded System App.)	2
<b>VOC 419</b>	In-plant Training/Field work/Mini Project – II (IA)	4
<b>Total Credits = General Education Components + Skill Development Components</b>		12+20= 32
<b>Semester – V</b>		
<b>General Education Components</b>		

<b>VOC 501</b>	Personality Development and Stress Management	4
<b>VOC 502</b>	Operations Management	4
<b>VOC 503</b>	Business Communication	2
<b>VOC 504</b>	Production Engineering	2
<b>Skill Development Components - Industrial Automation (A)</b>		
<b>VOC 511</b>	Workshop Technology	2
<b>VOC 512</b>	Introduction to Robotics	2
<b>VOC 513</b>	Networking Essentials	2
<b>VOC 514</b>	Advance Microcontrollers	2
<b>VOC 515</b>	Laboratory Coursework – XVII (IA)(Pertaining to VOC 511 and VOC 512)	3
<b>VOC 516</b>	Laboratory Coursework – XVIII (IA)(Pertaining to VOC 513 and VOC 514)	3
<b>VOC 517</b>	Major Project – Phase I	2
<b>VOC 518</b>	In-plant Training/Field work/Mini Project – III (IA)	2
<b>Total Credits = General Education Components + Skill Development Components</b>		12+1 8=30
<b>Semester – VI</b>		
<b>General Education Components</b>		
<b>VOC 601</b>	Foreign Language(German/Chinese/Japanese/Russian)	4
<b>VOC 602</b>	Entrepreneurship Development	4
<b>VOC 603</b>	Production Management	4
<b>Skill Development Components - Industrial Automation (A)</b>		
<b>VOC 611</b>	Flexible Manufacturing System	2
<b>VOC 612</b>	Industrial Robotics	2
<b>VOC 613</b>	Introduction to SCADA	2
<b>VOC 614</b>	Introduction to IOT	2
<b>VOC 615</b>	Laboratory Coursework – XVII (IA)(Pertaining to VOC 611 and VOC 612)	3
<b>VOC 616</b>	Laboratory Coursework – XVIII (IA)(Pertaining to VOC 613 and VOC 614)	3
<b>VOC 617</b>	Major Project – Phase II	2
<b>VOC 618</b>	In-plant Training/Field work/Mini Project – IV (IA)	2
<b>Total Credits = General Education Components + Skill Development Components</b>		12+1 8=30
<b>Total Credits ( Semester I to VI)</b>		180

# Dr. Babasaheb Ambedkar

## Course Structure

### M. Voc (Industrial Automation)

Semester	Paper Code	Paper Title	Contact Hrs/Week	Credits
<b>Semester I</b>	<b>CC100</b>	Constitution of India	2	2
	<b>IAC110</b>	Electronic Systems	2	2
	<b>IAC111</b>	Power Electronics	2	2
	<b>IAC112</b>	Transducer Technology	2	2
	<b>IAC113</b>	Electric Drives	2	2
	<b>IAF120</b>	Embedded Systems Design	2	2
	<b>IAF121</b>	Programmable Logic Controllers	2	2
	<b>CF101</b>	Research Methodology	1	1
	<b>EF1XX</b>	Elective Foundation ( Any One) <ul style="list-style-type: none"> <li>▪ Operations Management (EF130)</li> <li>▪ Materials management (EF 131)</li> </ul>	2	2
	<b>IALC 140</b>	Electronic Systems lab	3	1.5
	<b>IALC 141</b>	Power Electronics lab	3	1.5
	<b>IALC 142</b>	Instrumentation lab - I	3	1.5
	<b>IALC 143</b>	Electric Drives lab	3	1.5
	<b>IALF 150</b>	Embedded Systems Lab	3	1.5
	<b>IALF 151</b>	PLC lab	3	1.5
Assignments/Tutorials will remain integral part of all courses				
<b>Total Credits for Semester – I</b>				<b>26</b>
Semester	Paper Code	Paper Title	Contact Hrs/Week	Credits
<b>Semester II</b>	<b>IAC 210</b>	Communication Protocols for Instrumentation	2	2
	<b>IAC 211</b>	Mechatronics	2	2
	<b>IAC 212</b>	Advanced Transducers	2	2
	<b>IAF 220</b>	Robotics	2	2
	<b>IAF 221</b>	Process Control	2	2
	<b>IAF 222</b>	Industrial Automation	2	2
	<b>IALC 230</b>	Industrial Networking lab	3	1.5
	<b>IALC 231</b>	Mechatronics lab	3	1.5
	<b>IALC 232</b>	Instrumentation lab -II	3	1.5
	<b>IALF 240</b>	Robotics lab	3	1.5
	<b>IALF 241</b>	Process Control lab	3	1.5
	<b>IALF 242</b>	Industrial Automation lab	3	1.5
	<b>IAR 250</b>	Research/ Industrial Project – Phase I	10	5

		(Review of Literature/ Industrial Orientation, Formulation of Topic, Experimental Plan)		
Assignments/Tutorials will remain integral part of all courses				
<b>Total Credits for Semester – II</b>				<b>26</b>
Semester	Paper Code	Paper Title	Contact Hrs/Week	Credits
<b>Semester III</b>	<b>IAGE 31X</b>	Generic Elective – I	2	2
	<b>IAGE 31X</b>	Generic Elective – II	2	2
	<b>IAGE 31X</b>	Generic Elective – III	2	2
	<b>IAGE 31X</b>	Generic Elective – IV	2	2
	<b>IAOE 32X</b>	Open Elective -I	2	2
	<b>IALE 33X</b>	Lab Course based on Generic Elective – I	3	1.5
	<b>IALE 33X</b>	Lab Course based on Generic Elective – II	3	1.5
	<b>IALE 33X</b>	Lab Course based on Generic Elective – III	3	1.5
	<b>IALE 33X</b>	Lab Course based on Generic Elective – IV	3	1.5
	<b>IAR 340</b>	Research/ Industrial Project – Phase II (Experimental Work)	18	9
Assignments/Tutorials will remain integral part of all courses				
<b>Total Credits for Semester – III</b>				<b>25</b>
Semester	Paper Code	Paper Title	Contact Hrs/Week	Credits
<b>Semester IV</b>	<b>IAGE 41X</b>	Generic Elective - V	2	2
	<b>IAOE 42X</b>	Open Elective - II	2	2
	<b>IALE 43X</b>	Lab Course based on Generic Elective – V	3	1.5
	<b>IAR 440</b>	Research/ Industrial Project – Phase III (Experimental Work Continued, Organization and Interpretation of Result, Dissertation, Presentation)	39	19.5
Assignments/Tutorials will remain integral part of all courses				
<b>Total Credits for Semester – IV</b>				<b>25</b>

<b>Electives for Semester – III</b>							
(Any four theory paper along with corresponding lab course have to be chosen from generic electives) (Any one theory paper along with corresponding lab course have to be chosen from open electives)							
	Paper Code	Paper Title			Generi	Paper Code	Paper Title
<b>G</b>	<b>IAGE 310</b>	Industrial Processes and Instrumentation			<b>Generi</b>	<b>IALE 330</b>	Lab Course based on Industrial Process Control

	<b>IAGE 311</b>	SCADA System and Applications		<b>IALE 331</b>	Lab Course based on SCADA System and Applications
	<b>IAGE 312</b>	Applied Hydraulics and Pneumatics		<b>IALE 332</b>	Lab Course based on Applied Hydraulics and Pneumatics
	<b>IAGE 313</b>	Industrial Robotics		<b>IALE 333</b>	Lab Course based on Industrial Robotics
	<b>IAGE 314</b>	Advanced Sensor Technology		<b>IALE 334</b>	Lab Course based on Advanced Sensor Technology
	<b>IAGE 315</b>	Kinetics and Dynamics of Robotics		<b>IALE 335</b>	Lab Course based on Kinetics and Dynamics of Robotics
	<b>IAGE 316</b>	Mechatronics Systems Design		<b>IALE 336</b>	Lab Course based on Mechatronics Systems Design
	<b>IAGE 317</b>	Distributed Control System		<b>IALE 337</b>	Lab Course based on Distributed Control System
	<b>IAGE 318</b>	Advanced Electrical Drives		<b>IALE 338</b>	Lab Course based on Electrical Drives
	<b>IAGE 319</b>	Advanced Microcontrollers		<b>IALE 339</b>	Lab Course based on Advanced Microcontrollers
<b>Open</b>	<b>IAOE 321</b>	Applied Hydraulics and Pneumatics	/		
	<b>IAOE 322</b>	Robotics			
<b>Electives for Semester – IV</b>					
(Any one theory paper along with corresponding lab course have to be chosen from generic electives)					
(Any one theory paper along with corresponding lab course have to be chosen from open electives)					
	<b>Paper Code</b>	<b>Paper Title</b>		<b>Paper Code</b>	<b>Paper Title</b>
<b>Generic</b>	<b>IAGE 410</b>	Automated and Computer Integrated Manufacturing	<b>Generic(Lab)</b>	<b>IALE 430</b>	Lab Course based on Automated and Computer Integrated Manufacturing
	<b>IAGE 411</b>	CNC Technology		<b>IALE 431</b>	Lab Course based on CNC Technology
	<b>IAGE 412</b>	Micro Mechatronic Systems		<b>IALE 432</b>	Lab Course based on Micro Mechatronic Systems
<b>Open</b>	<b>IAOE 420</b>	Automated Manufacturing	/		
	<b>IAOE 421</b>	Industrial Robotics			
	<b>IAOE 422</b>	Mechatronics Fundamentals			

