

**GOVERNMENT COLLEGE OF ENGINEERING, JALGAON**

**Department of Instrumentation Engineering**

**Scheme for Semester I B. Tech. (Instrumentation Engineering) with effect from academic year 2023-24 (As per NEP 2020)**

Course Code	Name of the Course	Component as per NEP	Teaching Scheme				Evaluation Scheme					Credit	
			L	T	P	Total	Theory			Practical			Total
							MSE	ISA	ESE	ICA	ESE		
SH100AN	Induction Program [Includes Universal Human Values (UHV - I module)]	Mandatory Audit Course as per AICTE				...	...	...	50	...	50	AU	
SH101N	Engineering Mathematics I	BSC	3	1	...	4	30	10	60	...	...	100	4
SH102N	Engineering Chemistry	BSC	3	...	...	3	30	10	60	...	...	100	3
ME151N	Engineering Graphics	ESC	3	...	...	3	30	10	60	...	...	100	3
CO101N	Fundamentals of Computer Science and Engineering	ESC	3	...	...	3	30	10	60	...	...	100	3
ME152N	Engineering Exploration Workshop	VSEC (Skill)	...	...	4	4	...	...	...	50	...	50	2
SH103N	Engineering Chemistry Lab	BSC	...	...	2	2	...	...	...	50	...	50	1
ME153N	Engineering Graphics Lab	ESC	...	...	2	2	...	...	...	50	...	50	1
CO102N	Fundamentals of Computer Science and Engineering Lab	ESC	...	...	2	2	...	...	...	50	...	50	1
LL102N	Liberal Learning Course (Yoga and Nutrition)	LLC	...	...	4	4	...	...	..	50	...	50	2
SH100N	Ability Enhancement Course (English)	AEC (HSSM)	1	...	2	3	...	...	..	50	...	50	2
<b>Total</b>			<b>13</b>	<b>1</b>	<b>16</b>	<b>30</b>	<b>120</b>	<b>40</b>	<b>240</b>	<b>300</b>	<b>0</b>	<b>700</b>	<b>22</b>

**L : Lecture**

**T: Tutorial**

**P: Practical**

**MSE: Mid Semester Examination**

**ISA :Internal Sessional Assessment**

**ESE: End Semester Examination**

**ICA : Internal Contineous Accessment**

<b>GOVERNMENT COLLEGE OF ENGINEERING, JALGAON</b>													
<b>Department of Instrumentation Engineering</b>													
<b>Scheme for Semester II B. Tech. (Instrumentation Engineering) with effect from academic year 2023-24 (As per NEP 2020)</b>													
Course Code	Name of the Course	Component as per NEP	Teaching Scheme				Evaluation Scheme						Credit
			L	T	P	Total	Theory			Practical		Total	
							MSE	ISA	ESE	ICA	ESE		
SH151N	Engineering Mathematics II	BSC	3	1	...	4	30	10	60	...	...	100	4
SH152N	Engineering Physics	BSC	3	...	...	3	30	10	60	...	...	100	3
ET151N	Basic Electronics Engineering	PCC	3	...	...	3	30	10	60	...	...	100	3
CO151N	Programming for Problem Solving	ESC	3	...	...	3	30	10	60	...	...	100	3
ME101N	Mechanical Workshop Practices	VSEC (Skill)	...	...	4	4	...	...	...	50	...	50	2
CO152N	Programming for Problem Solving Lab	ESC	...	...	2	2	...	...	...	50	...	50	1
IK103N	Essence of Indian Traditional Knowledge	HSSM (IKS)	2	...	...	2	30	10	60	...	...	100	2
SH153N	Engineering Physics Lab	BSC	...	...	2	2	...	...	...	50	...	50	1
ET152N	Basic Electronics Engineering lab	PCC	...	...	2	2	...	...	...	50	...	50	1
LL101N	Liberal Learning Course (NSS and Sports)	LLC	...	...	4	4	...	...	..	50	...	50	2
<b>Total</b>			<b>14</b>	<b>1</b>	<b>14</b>	<b>29</b>	<b>150</b>	<b>50</b>	<b>300</b>	<b>250</b>	<b>0</b>	<b>750</b>	<b>22</b>
<b>L : Lecture</b>		<b>T: Tutorial</b>		<b>P: Practical</b>			<b>MSE: Mid Semester Examination</b>						
<b>ISA :Internal Sessional Assessment</b>		<b>ESE: End Semester Examination</b>			<b>ICA : Internal Contineous Accessment</b>								
Exit Option for UG Certificate: 8 credits in work based Vocational Courses or Internship/apprentiship offered during summer Vacation (As per exit policy approved by Board of Studies (Instrumentation Engineering) in its meeting held on 06 July, 2023.)													
Note: Students securing CGPA 7.0 and above upto semester-II can opt for Double minor by registering additional courses [Semester-III onwards] and earning these additional 18 credits . Students need to submit written application through respective HoD to Academic and Examination Cell. This double minor track should be different than multidisciplinary minor track opted by students from semester-III as per Multi Discxiplinary Minor (MDM) courses. For example: If Instrumentation Engineering student opted for Civil Engineering track for MDM, then he/she should register for additional credits other than Mechnaical and Civil Engineering courses for double minor. Students opting for double minor can not opt for either Honors or Honors with research degree.													

<b>GOVERNMENT COLLEGE OF ENGINEERING, JALGAON</b>													
<b>Department of Instrumentation Engineering</b>													
<b>Scheme for Semester III B. Tech. (Instrumentation Engineering) with effect from academic year 2023-24 (As per NEP 2020)</b>													
Course Code	Name of the Course	Component as per NEP	Teaching Scheme				Evaluation Scheme						Credit
			L	T	P	Total	Theory			Practical		Total	
							MSE	ISA	ESE	ICA	ESE		
IN201N	Analog Electronics	PCC	3	...	...	3	30	10	60	...	...	100	3
IN202N	Network Theory	PCC	2	...	...	2	30	10	60	...	...	100	2
IN203N	Transducers	PCC	3	...	...	3	30	10	60	...	...	100	3
XX204N	Open Elective -I	OE (MDC)	3	1	...	4	30	10	60	...	...	100	4
XXMYYYN	Multi Disciplinary Minor-I	MDM-I (MDC)	2	...	...	2	30	10	60	...	...	100	2
IN206N	Analog Electronics Lab	PCC	...	...	2	2	...	...	...	30	20	50	1
IN207N	Transducers Lab	PCC	...	...	2	2	...	...	...	30	20	50	1
SH202N	Entrepreneur Development	EEMC	2	...	...	2	30	10	60	...	...	100	2
SH204N	Universal Human Values - II	VEC (HSSM )	2	...	...	2	30	70	...	...	...	100	2
IN250N	Community Engineering Project	CEP (ELC)	...	...	2	2	...	...	...	30	20	50	2
<b>Total</b>			<b>17</b>	<b>1</b>	<b>6</b>	<b>24</b>	<b>210</b>	<b>130</b>	<b>360</b>	<b>90</b>	<b>60</b>	<b>850</b>	<b>22</b>
<b>L : Lecture</b>		<b>T: Tutorial</b>	<b>P: Practical</b>				<b>MSE: Mid Semester Examination</b>						
<b>ISA :Internal Sessional Assessment</b>		<b>ESE: End Semester Examination</b>				<b>ICA : Internal Contineous Accessment</b>							
<b>List of Open Elective -I</b>													
IN204NX Transducers													
IN204NY Industrial Instrumentation													

<b>GOVERNMENT COLLEGE OF ENGINEERING, JALGAON</b>													
<b>Department of Instrumentation Engineering</b>													
<b>Scheme for Semester IV B. Tech. (Instrumentation Engineering) with effect from academic year 2023-24 (As per NEP 2020)</b>													
Course Code	Name of the Course	Component as per NEP	Teaching Scheme				Evaluation Scheme					Credit	
			L	T	P	Total	Theory			Practical			Total
							MSE	ISA	ESE	ICA	ESE		
IN251N	Electronic Measurements and Instrumentation	PCC	3	...	...	3	30	10	60	...	...	100	3
IN252N	Automatic Control System	PCC	3	...	...	3	30	10	60	...	...	100	3
IN253N	Digital Circuit Design	PCC	3	...	...	3	30	10	60	...	...	100	3
XX254N	Open Elective-II	OE (MDC)	2	...	...	2	30	10	60	...	...	100	2
XXMYYYN	Multi Disciplinary Minor-II	MDM-II (MDC)	2	...	...	2	30	10	60	...	...	100	2
IN256N	Electronics Measurement and Instrumentation Lab	VSEC	...	...	2	2	...	...	...	30	20	50	1
IN257N	Automatic Control System Lab	PCC	...	...	2	2	...	...	...	30	20	50	1
IN258N	Digital Circuit Design Lab	VSEC	...	...	2	2	...	...	...	30	20	50	1
SH201N	Project and Finance Management	EEMC (Mgmt)	2	...	...	2	30	10	60	...	...	100	2
SH203N	Environmental Science	VEC (HSSM)	2	...	...	2	30	20	...	...	...	50	2
SH205N	मराठी लेखनकौशल्य (Writing Skills)*	AEC (HSSM)	2	...	...	2	30	20	...	...	...	50	2
<b>Total</b>			<b>19</b>	<b>0</b>	<b>6</b>	<b>25</b>	<b>240</b>	<b>100</b>	<b>360</b>	<b>90</b>	<b>60</b>	<b>850</b>	<b>22</b>
* Students are permitted to earn credits of this course for any other Modern Indian Language (other than English) through MOOC courses, as per credit transfer policy of the instit													
<b>L : Lecture</b>		<b>T: Tutorial</b>		<b>P: Practical</b>			<b>MSE: Mid Semester Examination</b>						
<b>ISA :Internal Sessional Assessment</b>		<b>ESE: End Semester Examination</b>			<b>ICA : Internal Contineous Accessment</b>								
<b>List of Open Elective -II</b>													
IN254NX Electronic Measurements and Instrumentation													
IN254NY Automatic Control System													
Exit Option for UG Diploma: 8 credits in Skill based Vocational Courses/Internship/apprentiship/MiniProject offered during summer vacation after Second Year (As per exit policy approved by Board of Studies (Instrumentation Engineering) in its meeting held on 06 July, 2023).													
Note: Students having CGPA more than 8.0, can register for additional 18 credits departmental honours courses from semester-V to earn the credits which will lead to honours degree in that major program with MDM													

<b>GOVERNMENT COLLEGE OF ENGINEERING, JALGAON</b>													
<b>Department of Instrumentation Engineering</b>													
<b>Scheme for Semester V B. Tech. (Instrumentation Engineering) with effect from academic year 2023-24 (As per NEP 2020)</b>													
Course Code	Name of the Course	Component as per NEP	Teaching Scheme				Evaluation Scheme						Credit
			L	T	P	Total	Theory			Practical		Total	
							MSE	ISA	ESE	ICA	ESE		
IN301N	Industrial Automation	PCC	3	1	...	4	30	10	60	...	...	100	4
IN302N	Microcontroller and Applications	PCC	3	...	...	3	30	10	60	...	...	100	3
IN303N	Signals and Systems	PCC	3	...	...	4	30	10	60	...	...	100	3
IN304N	Program Elective- I	PEC	3	...	...	3	30	10	60	...	...	100	3
XX305N	Open Elective-III	OE (MDC)	2	...	...	2	30	10	60	...	...	100	2
XXMYYYYN	Multi Disciplinary Minor-III	MDM-III (MDC)	4	...	...	4	30	10	60	...	...	100	4
IN307N	Industrial Automation Lab	PCC	...	...	2	2	...	...	...	30	20	50	1
IN308N	Microcontroller and Applications Lab	PCC	...	...	2	2	...	...	...	30	20	50	1
IN310N	Program Elective- I Lab	PEC	...	...	2	2	...	...	...	30	20	50	1
<b>Total</b>			<b>18</b>	<b>1</b>	<b>6</b>	<b>26</b>	<b>180</b>	<b>60</b>	<b>360</b>	<b>90</b>	<b>60</b>	<b>750</b>	<b>22</b>
IN311N	Control System for Electrical Vehicle	DHC-I	3	...	...	3	30	10	60	...	...	100	3
IN312N	Control System for Electrical Vehicle Lab	DHC-II	...	...	2	2	...	...	...	30	20	50	1
	<b>List of Open Elective -III</b>		<b>List of Program Elective-I</b>										
	IN305NX Basics of Process Instrumentation		A. Power Plant Instrumentation										
	IN305NY Virtual Instrumentation		B. Virtual Instrumentation										
			C. Power Electronics										
<b>L : Lecture</b>		<b>T: Tutorial</b>	<b>P: Practical</b>				<b>MSE: Mid Semester Examination</b>						
<b>ISA :Internal Sessional Assessment</b>		<b>ESE: End Semester Examination</b>				<b>ICA : Internal Contineous Accessment</b>							

<b>GOVERNMENT COLLEGE OF ENGINEERING, JALGAON</b>													
<b>Department of Instrumentation Engineering</b>													
<b>Scheme for Semester VI B. Tech. (Instrumentation Engineering) with effect from academic year 2023-24 (As per NEP 2020)</b>													
Course Code	Name of the Course	Component as per NEP	Teaching Scheme				Evaluation Scheme					Credit	
			L	T	P	Total	Theory			Practical			Total
							MSE	ISA	ESE	ICA	ESE		
IN351N	Process Instrumentation	PCC	3	...	...	3	30	10	60	...	...	100	3
IN352N	Distributed Control System	PCC	3	...	...	3	30	10	60	...	...	100	3
IN353N	Unit Operations and Control	PCC	2	...	...	2	30	10	60	...	...	100	2
<i>XXMYYYN</i>	Multi Disciplinary Minor-IV	MDM-IV (MDC)	2	...	...	2	30	10	60	...	...	100	2
IN355N	Program Elective- II	PEC	3	...	...	3	30	10	60	...	...	100	3
IN356N	Program Elective- III	PEC	3	...	...	3	30	10	60	...	...	100	3
IN357N	Process Instrumentation Lab	PCC	...	...	2	2	...	...	...	30	20	50	1
IN358N	Distributed Control System Lab	PCC	...	...	2	2	...	...	...	30	20	50	1
IN360N	Program Elective- II Lab	PEC	...	...	2	2	...	...	...	30	20	50	1
IN361N	Program Elective- III Lab	PEC	...	...	2	2	...	...	...	30	20	50	1
IN362N	Mini Project	VSEC (Skill)	...	...	4	4	...	...	...	30	20	50	2
<b>Total</b>			<b>16</b>	<b>0</b>	<b>12</b>	<b>28</b>	<b>180</b>	<b>60</b>	<b>360</b>	<b>150</b>	<b>100</b>	<b>850</b>	<b>22</b>
IN363N	Control of Robotic System	DHC-III	3	...	...	3	30	10	60	...	...	100	3
<b>List of Program Elective-II</b>			<b>List of Program Elective-III</b>										
A. Digital Signal Processing			A. Neural Network and Fuzzy Logic										
B. Modern Control Theory			B. Analytical Instrumentation										
C. Instrumentation System Design			C. Opto Electronic Instrumentation										
<b>L : Lecture</b>		<b>T: Tutorial</b>		<b>P: Practical</b>			<b>MSE: Mid Semester Examination</b>						
<b>ISA :Internal Sessional Assessment</b>		<b>ESE: End Semester Examination</b>					<b>ICA : Internal Contineous Accessment</b>						
<b>Exit Option for B.Voc.: 8 credits in Skill based Vocational Courses/Internship/apprentiship/MiniProject offered during summer vacation after Third Year (</b>													

GOVERNMENT COLLEGE OF ENGINEERING, JALGAON													
Department of Instrumentation Engineering													
Scheme for Semester VII B. Tech. (Instrumentation Engineering) with effect from academic year 2023-24 (As per NEP 2020)													
Course Code	Name of the Course	Component as per NEP	Teaching Scheme				Evaluation Scheme					Credit	
			L	T	P	Total	Theory			Practical			Total
							MSE	ISA	ESE	ICA	ESE		
IN401N	Advanced Linear Continuous Control Systems: Applications with MATLAB Programming and Simulink (NPTEL Course 8 Week)	PCC	As per NPTEL Teaching Scheme				examination scheme and institute policy for					100	3
IN402N	Program Elective-IV	PEC	As per NPTEL Teaching Scheme				examination scheme and institute policy for					100	3
XXMYYYN	Multi Disciplinary Minor-V	MDM-V (MDC)	As per NPTEL Teaching Scheme				examination scheme and institute policy for					100	2
IN410N	Professional Internship	ELC	...	...	24	24	...	...	...	100	...	100	12
<b>Total</b>			...	...	<b>24</b>	<b>24</b>	...	...	...	<b>100</b>	...	<b>400</b>	<b>20</b>
IN411N	Air pollution and Control (12 Weeks NPTEL Course)	DHC-IV	As per NPTEL Teaching Scheme				As per NPTEL examination scheme and institute policy for credit transfer					100	4
IN412N	Instrumentation and Process Control in Food Industry (NPTEL Course 8 Week)	DHC-V	As per NPTEL Teaching Scheme				As per NPTEL examination scheme and institute policy for credit transfer					100	3
<b>A Program Internship of one semester is to be completed by the students. One semester means 12 weeks minimum (Engagement hours of student for internship should be 18-20 hours per week.)</b>													
<b>List of Program Elective-IV</b>													
A. Chemical Process Control (NPTEL Course 8 Week)													
B. Instrumentation and Process Control in Food Industry (NPTEL Course 8 Week)													
C. Any other NPTEL/MOOC course as approved by BoS from time to time													
<b>L : Lecture</b>		<b>T: Tutorial</b>		<b>P: Practical</b>			<b>MSE: Mid Semester Examination</b>						
<b>ISA :Internal Sessional Assessment</b>				<b>ESE: End Semester Examination</b>				<b>ICA : Internal Contineous Accessment</b>					
Note: Mentor faculty/Course Teacher shall be allotted for each online course for smooth evaluation and completion of the course. Mentor faculty/course Teacher need to enrol the course alongwith students													

<b>GOVERNMENT COLLEGE OF ENGINEERING, JALGAON</b>													
<b>Department of Instrumentation Engineering</b>													
<b>Scheme for Semester VIII B. Tech. (Instrumentation Engineering) with effect from academic year 2023-24 (As per NEP 2020)</b>													
Course Code	Name of the Course	Component as per NEP	Teaching Scheme				Evaluation Scheme					Credit	
			L	T	P	Total	Theory			Practical			Total
							MSE	ISA	ESE	ICA	ESE		
IN451N	BioMedical Instrumentation	PCC	3	...	...	3	30	10	60	...	...	100	3
IN452N	Program Elective - V	PEC	2	...	...	2	30	10	60	...	...	100	2
XXMYYYN	Multi Disciplinary Minor-VI	MDM-VI (MDC)	2	...	...	2	30	10	60	...	...	100	2
IN454N	Research Methodology and IPR	ELC	3	1	...	4	30	10	60	...	...	100	4
IN455N	Program Elective - VI	PEC	3	...	...	3	30	10	60	...	...	100	3
IN456N	BioMedical Instrumentation Lab	PCC	...	...	2	2	...	...	...	30	20	50	1
IN457N	Program Elective-V Lab	PEC	...	...	2	2	...	...	...	30	20	50	1
IN458N	Project	ELC	...	...	8	8	...	...	...	50	100	150	4
<b>Total</b>			<b>13</b>	<b>1</b>	<b>12</b>	<b>26</b>	<b>150</b>	<b>50</b>	<b>300</b>	<b>110</b>	<b>140</b>	<b>750</b>	<b>20</b>
IN460N	Modelling and Simulation	DHC-VI	4	...	...	4	30	10	60	...	...	100	4
	<b>List of Program Elective-V</b>												
	A. Embedded Systems												
	B. AI and Soft Computing												
	C. Optimization Techniques												
	<b>List of Program Elective-VI</b>												
	A. Industrial Pollution and Management												
	B. Industrial Safety and Hazard Management												
	C. Automotive Instrumentation												
<b>L</b>	<b>: Lecture</b>	<b>T</b>	<b>: Tutorial</b>	<b>P</b>	<b>: Practical</b>	<b>MSE</b>	<b>: Mid Semester Examination</b>	<b>ISA</b>	<b>: Internal Sessional Assessment</b>	<b>ESE</b>	<b>: End Semester Examination</b>	<b>ICA</b>	<b>: Internal Contineous Accessment</b>
<b>Total Credits: 172 for BTech in Instrumentation with MDM</b>													
<b>Total Credits: 172 + 18 = 190 for BTech in Instrumentation with MDM and specialization minor [Double Minor]</b>													
<b>Total Credits: 172 + 18 = 190 for BTech in Instrumentation with MDM and Honours in Instrumentation</b>													
<b>Total Credits: 172 + 18 = 190 for BTech in Instrumentation with MDM and Honours with Research</b>													