

**Nirma University**  
**Institute of Technology**  
**B. Tech (Instrumentation and Control Engineering)**  
**Semester I / II**

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<b>Course Code</b>	<b>IC101</b>
<b>Course Title</b>	<b>Introduction to Instrumentation and Control Engineering</b>

**Course Learning Outcome:**

At the end of the course, students will be able to -

- relate the importance of engineering in day to day life,
- exemplify role of instrumentation and control engineering in other domains,
- interpret the opportunities and future trends of instrumentation and control engineering,
- recognize the role of instrumentation and control engineer in industry.

<b>Syllabus</b>	<b>Teaching Hours</b>
<b>UNIT 1: About Engineering</b> About engineering, History of engineering, Social relevance of engineering, Role of engineering in human life	<b>1</b>
<b>UNIT 2: Introduction to Instrumentation and Control Engineering</b> Major constituents of IC Engineering: Test and Measurement, Control Engineering, Electronics, Industrial Automation, etc	<b>3</b>
<b>UNIT 3: Aspects of IC Engineering</b> Productivity, Profitability, Safety, Optimization, Environmental concern, Societal needs, etc.,	<b>2</b>
<b>UNIT 4: Emerging Trends</b> Building Automation, Internet of Things, Business Process Automation, Management Information Systems, Artificial Intelligence, Machine Vision	<b>3</b>
<b>UNIT 5 : Interdisciplinary Approach</b> IC Engineering as interdisciplinary branch, inter relation of IC engineering with other domains	<b>2</b>
<b>UNIT 6: Career opportunities</b> Role and Responsibilities of Instrumentation and Control Engineer in various verticals of industries, Entrepreneurship, Start up, Further studies	<b>2</b>

**UNIT 7: Case Studies**

Role of IC Engineering in noteworthy industrial developments

**2****Self Study:**

- (1) Important milestone in Instrumentation and Control Engineer field.
- (2) Key development – past and present

**Suggested Readings:**

- (1) International Society of Automation portal - [www. isa.org](http://www.isa.org)
- (2) InTech Magazine
- (3) <https://www.controleng.com/>