Aim	To aim of this coursework is to enhance the technical knowledge and skills of the students in the area of industrial instrumentation and ability to identify various sensors and process operations from the Industry measurement.
Learning Outcomes	• Design a model instrumentation system including the selection of an appropriate sensor/transducer for a specified measurement process. • Analyse the effectiveness and appropriateness of an Instrumentation system for given cases. • Explain various techniques used in field communication for industrial instrumentation applications.

Task1-25%

Design and fabricate Voltage to Current converter

1. Design a circuit to convert from voltage to current using an operational amplifier. The practical values of voltage should varies from 1V to 5V to obtain the output current such that minimum current should be 4mA and maximum current to be 20 mA.
2. Clearly outline the detailed design procedure including all the assumptions made in the report including cost analysis.
3. Tabulate practical results obtained with necessary graph and result analysis.

Task 2-40%

1. Discuss the measurement methods (at least two) used in the industries for the following
   i) Electrical type Pressure measurement
   ii) Indirect methods of Level measurement
   iii) Viscosity measurement
2. Based on the comparison of the methods made in part 1, recommend most appropriate method for the above measurements.

Report style:

The report should contain the following components:

- Cover page
- Index
- Abstract (max: 750 words)
- Introduction
- Objective of the design
- Circuit for the design and design calculations
- Cost analysis
- Hardware implementation
- Result analysis
- Conclusion and recommendation
- References

Headings 1-14point font, Headings 2 – 12 point font, Body text -11 point font, font face – Times New Roman and paragraph spacing – single line spacing with no borders.

Recommended reading list:

R1: Patranabis,D.,2017. *Principles of Industrial Instrumentation*. 2nd edition. New Delhi: Tata McGraw Hill.
R2: Doebelin E.O.,2019. *Measurement Systems: Application and Design*", 7th edition. New York:McGraw Hill.
R3: Noltingk B.E.,2016. *Instrumentation Reference Book.* 2nd edition. Butterworth Heinemann, Oxford.
R4: Jones .,2016. *Instrumentation systems*, volume 4, 4th Edition. Butterworth publication.
E1: Morris, Alan S. 2020. *Measurement and Instrumentation*: *Theory and applications* 3rd edition . Kindle Edition.

Component	Description
1	Abstract, Aim, objectives and Introduction
2	Task 1: Design calculations, circuit design, cost analysis and Result analysis
	Task 2: Theory, construction, working principle, diagram, comparison, conclusion and recommendation
3	Report structure in terms of logic and coherence with proper referencing and citations