Universidad de Navarra

Sistemas de Medida e Instrumentación (online, CF)

Guía docente 2026-27

PRESENTACIÓN

The main objective is to familiarize the students with measurement and instrumentation techniques.

- **Carácter**: ONLINE.
- **ECTS**: 2
- **Curso y semestre**: Summer
- **Idioma**: English
- **Título**: Complementos para acceder al MII
- **Módulo y materia de la asignatura**:
- **Profesor responsable de la asignatura**: Javier Díaz Dorronsoro
- **E-mail**: jdiaz@unav.es

RESULTADOS DE APRENDIZAJE (Competencias)

- CE24 - Conocimiento aplicado de sistemas y procesos de fabricación, metrología y control de calidad.

PROGRAMA

The main objective is to familiarize the students with measurement and instrumentation techniques in the following topics:

- Strain gauge measurements
- Selection of sensors and transducers
- Signal conditioning: Wheatstone bridge, Cold junction for thermocouples, amplifiers, ...
- Use of data acquisition boards
- Calibration: sensitivity, hysteresis, accuracy, reproducibility, etc.

Theory covering these topics is distributed in the following lessons:

1. The general measurement system
2. Static characteristics of measurement system elements
3. The accuracy of measurement systems in the steady state
4. Dynamic characteristics of measurement systems
5. Signals and noise in measurement systems
6. Reliability, choice and economics of measurement systems
7. Sensors
8. Signal conditioning elements
9. Signal processing elements
10. Data acquisition

ACTIVIDADES FORMATIVAS

The training activities will consist of:

- Viewing of the videos with the explanations of the theoretical topics.
- Study of the transparencies corresponding to the different theoretical topics.
- Carrying out of problems.
- Asking doubts to the responsible teacher by requesting an appointment by e-mail.

EVALUACIÓN

CONVOCATORIA ORDINARIA

- For the ordinary evaluation there will be an exam consisting of short theory questions and problems..

CONVOCATORIA EXTRAORDINARIA

- For the extraordinary evaluation there will be another exam consisting of short theory questions and problems.

HORARIOS DE ATENCIÓN

Dr Javier Díaz Dorronsoro (jdiaz@unav.es)

- Despacho 218 Edificio Miramón Planta 2
- Horario de tutoria: Concretar cita con el profesor

BIBLIOGRAFÍA

Main bibliography

1. Morris, A.S. and Langari, R. *Measurement and Instrumentation. Theory and Application*. Elsevier, 2012. Localízalo en la Biblioteca
2. Morris, A. S. *Measurement and Instrumentation Principles.* 2001*. Localízalo en la Biblioteca*

Other references

- Metrología. Practica de la medida en la industria / Aenor-- 1ª ed-- Madrid : Aenor, 1999.