

## Physics Laboratory 2

1. **Course number and name:** 020PP2NI3/020PL2NI3 Physics Laboratory 2

2. **Credits and contact hours:** 2 ECTS credits, 1x1:15 contact hours

3. **Name of course coordinator:** Joseph Kesserwani

4. **Instructional materials:** Lab experiments – Lab manual

5. **Specific course information**

a. **Catalog description:**

This course allows students to solidify their theoretical knowledge by putting it into practice through a variety of topics. They will have the opportunity to explore areas such as electrical circuits, linear filters, Fourier analysis, frequency analysis, the Thomson tube, thermal conduction, the Stefan-Boltzmann law, the oscillator with two degrees of freedom, diffraction and interference, as well as polarization.

b. **Prerequisites:** 020PP1NI2/020PL1NI2 Physics Laboratory 1

c. **Required/Selected Elective/Open Elective:** Required

6. **Educational objectives for the course**

a. **Specific outcomes of instruction:**

- Apply theoretical knowledge and develop practical skills.
- Manipulate and understand electrical circuits with components such as differentiators, adders, and subtractors.
- Master the basic concepts of linear filters in electrical circuits.
- Acquire skills in Fourier analysis, a fundamental technique for decomposing a signal into its frequency components.
- Experiment with the Thomson tube, a device used to study the motion of charged particles in an electromagnetic field.
- Study thermal conduction in various materials and structures.
- Understand the Stefan-Boltzmann law, which describes the thermal radiation emitted by a body.

b. **PI addressed by the course:**

PI	5.2	6.1	6.2	6.3	6.4
<b>Covered</b>		x	x	x	x
<b>Assessed</b>	x	x	x	x	x

7. **Brief list of topics to be covered**

- Electric Circuit Differentiator/Adder/Subtractor - Stefan-Boltzmann Law (2 lectures)

- Linear Filter - Pulsograph: Two-Degree-of-Freedom Oscillator (2 lectures)
- Fourier Analysis - Diffraction and Interference (2 lectures)
- Frequency Analysis – Polarization (2 lectures)
- Thomson Tube (2 lectures)
- Thermal Conduction (2 lectures)