

**Ecotehnologii****Ecotechnologies****Obiectiv principal**

Cursul prezinta aspecte legate de bazele teoretice ale ecotehnologiilor si implicatiile tehnologiilor asupra calitatii mediului. Toate aceste aspecte sunt abordate din perspectiva perturbatiilor introduse de tehnologiile de fabricatie asupra calitatii mediului cat si in functie impactul ecologic al produselor procesate sau al serviciilor.

**Course Objective**

The course presents the issues related to the theoretical bases and the implications of technologies on environment quality. All this are addressed, both in terms of the perturbations introduced by technology on the environment quality and in terms of the ecological impact of processed products or services..

**Curs**

2 ore/săptămână, total 28 ore

- Aspecte generale privind ecotehnologiile si calitatea mediului in acord cu standardele si prevederile europene si nationale.
- Reducerea noxelor si perturbatiilor asupra mediului produse de tehnologiile de procesare existente; tehnologii de desprafuire electrostatica.
- Tehnologii nepoluante: procesarea cu laser, procesarea termica a deseurilor cu microunde; aplicatii ale ultrasunetelor in managementul deseurilor.
- Elemente de baza privind manipularea și prelucrarea deșeurilor radioactive de la aplicații nucleare.
- Sortarea magnetica a deseurilor metalice; aplicatii ale curentilor turbionari.
- Reducerea deseurilor EEE prin metode de crestere a duratei de viata:
  - monitorizare si diagnoza; detectarea descarcarilor parțiale cu senzori acustico optici – interferometrul Fabry Perot;
  - dezvoltarea de produse ecologice – instrumentatie de masura de inalta tensiune bazata pe efecte electrooptice: efectul Faraday ; efectul Pockels; instrumentatie de masura bazata pe efectul piezoelectric.

**Course**

2 hours weekly, 28 hours total

- General aspects concerning the ecotechnologies and environment quality according to the european and national standards in force.
- Reducing the perturbations on the environment and of the pollutants level which are generated by the existing processing technologies; Dust particle removal by electrostatic technologies.
- Ecotechnologies; processing based on laser; thermal processing of waste using microwave technologies; applications of ultrasound on the waste management.
- Basic elements concerning the handling and processing of radioactive waste from nuclear applications.
- Magnetic separation of the metallic waste; eddy current applications
- Reducing of the WEEE through methods of lifetime increasing:
  - Monitoring and diagnosis; detection of partial discharge by means of acustico-optic sensors – Fabry Perot interferometer;
  - Developing and design of eco products: high voltage instrumentation based on the electrooptic effects: Faraday effect and Pockels effect; high voltage instrumentation based on the piezoelectric effect .

**Laborator**

1 ora/săptămână, total 14 ore

- Studiul influenței parametrilor de material ai deseurilor solid asupra procesarii termice in camp de microunde.
- Studiul neliniaritatii axelor motoarelor electrice cu ajutorul Dispozitivului cu Laser Damallini; reducerea vibratiilor si cresterea duratei de viata.
- Masurarea straturilor de acoperire metalica cu ajutorul dispozitivului digital cu ultrasunete..
- Sortarea deseurilor metalice cu ajutorului dispozitivului bazat pe curenti turbionari.
- Curatirea ecologica cu ultrasunete.

**Laboratory**

1 hour weekly, 14 hours total

- Study of impact of the solid waste characteristics on the thermal processing in microwave.
- Study of missalignment of electrical motor axis using the device Laser Damallini in order to reduce the vibrations and lifetime increasing.
- Measurement of the metallic coatings thickness using the digital device based on ultrasound.
- Sorting of metallic waste using the experimental device based on the eddy current principle.
- Ecological cleaning based on ultrasound.