

## COURSE ID SHEET



Course No. **5296**

**NTUA**

Semester:

**9**

Core

Elective

Specialization

**X**

Title:

**INDUSTRIAL REACTOR ENGINEERING**

Aim:

Insight in the field of Chemical Reaction Processes and Chemical Reactor Design.

Content:

***1. Dynamics of Chemical Process Systems***

- 1.1 First order chemical process systems. Response in standard stimulus forms.
- 1.2 Second order chemical process systems. Interacting and non-interacting stages. Second order general system.
- 1.3 Transport delay in ideal plug flow and laminar flow reactors.
- 1.4 Reactor dynamics for highly exothermic reactions. Chemical reactor safety.

***2. Industrial Reactors Design***

- 2.1 Unsteady state Non-Isothermal Reactor Design
- 2.2 Steady State Non Isothermal Reactors Modeling
- 2.3 Reactor Design for Multiple Reactions Systems
- 2.4. Case Studies: Semi-batch reactors, Recycle reactors, Reactors with side feed, Membrane reactors.

Hours per semester:

LECTURE

**16**

EXERCISES

**24**

LABORATORY

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HOME-WORK

**135**

**TOTAL HOURS: 175**

Student performance evaluation:

Exercises – Projects - Tests, Final Examination

The final grade results as follows:

50% Exercises – Projects – Tests

50% Final Examination