**Study Programme:** Chemical engineering

**Course Unit Title:** Chemical Process Equipment Design 1

**Course Unit Code: HPO303**

**Name of Lecturer(s):** Assoc. Prof. Svetlana Popović, PhD

**Type and Level of Studies:** Bachelor Academic Degree

**Course Status (compulsory/elective):** Compulsory for Chemical-process Engineering

**Semester (winter/summer):** Summer

**The language of instruction:** English

**Mode of course unit delivery (face-to-face/distance learning):** Face-to-face

**Number of ECTS Allocated:** 7

**Prerequisites:** -

**Course Aims:**

The aim of this course is to train students to design chemical process devices and equipment connecting heat and mass transfer principles to the dimensions of process equipment.

**Learning Outcomes:**

Student gain skills to analyze and select equipment. Formulate the equations for calculation of dimensions. Create solutions and recommendations for appropriate dimensions of equipment.

**Syllabus:**

*Theory*

The course includes topics: systems and equipment included in chemical engineering processes. Data collection and preparation for the calculations. Selecting appropriate material and energy balances to obtain dimensions of devices for various unit operations such as filtration, distillation, absorption, adsorption, extraction, heat exchangers, evaporators, etc. Investment and cost estimation. Short cut design methods.

*Practice*

Selection and application of appropriate quantitative models for solving problems related to the theory presented during lectures using software Mathlab or Mathcad. Introduction to ASPEN Plus design software.

**Required Reading:**

1. Couper, J.R., Roy Penney, W., Fair, J.R., Walas, S. M.Chemical Process Equipment (Third Edition) Selection and Design, 2012,
2. Coulson, J.M., Richardson, J.F., Chemical Engineering (Vol. VI), An Introduction to Chemical Engineering Design (R.K. Sinnott), Pergamon Press, NY, 2002.

| **Weekly Contact Hours:** 6 | **Lectures:** 3 | **Practical work:** 3 |
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**Teaching Methods:**

Lectures, solving problems and laboratory practicum students group work

**Knowledge Assessment (maximum of 100 points): 100**

| **Pre-exam obligations** | points | **Final exam** | points |
|---|---|---|---|
| Test I and Test II | 70 | oral exam | 30 |
| Seminar(s) | 0 | | |