Course title: Practical advanced organic chemistry					
	Specialty	**Semester**	**Number of ECTS**	**Number of hours in the class**	**Form**
	Foreign students	**winter**	**4**	**45**	**Lab class**

Name of lecturer: Dr. hab. Elżbieta Jankowska, Dr. hab. Aneta Szymańska

Objective of the course (expected learning outcomes and competences to be acquired)

The course introduces the student to techniques and procedures in synthesis, isolation, purification, and characterization of organic compounds.

Student learning outcomes:

Upon completion of the course, students should be able to:

• Apply knowledge obtained in "Organic chemistry" lecture to propose mechanisms of reactions conducted in the laboratory.

• Perform common calculations, including mass balance, limiting reagent, and percent yield.

• Handle safely and appropriately laboratory glassware, equipment, and chemical reagents, using general guidelines and basic knowledge about the common hazards in an organic chemistry laboratory.

• Assemble glassware and perform the following techniques as a part of synthetic procedures: distillation, reflux, separation, isolation, and crystallization.

• Assemble glassware and perform syntheses requiring special conditions, including reactions under the reduced pressure, reactions in the air- and/or water-protected systems, microwave-induced reactions, etc.

• Perform micro scale reactions

• Characterize prepared substances by physical and spectroscopic means

• Write a proper laboratory report containing MSDS information on relevant chemical reagents, experimental procedure followed, data collected, and observations made during the experimental process.

Prerequisites: completion of the "Basic mechanism in organic chemistry" lecture and lab classes

Teaching methods:

- Laboratory classes - experiments

Course contents

- Training in laboratory techniques such crystallization, extraction and thin-layer chromatography
- Synthesis of organic compounds using one of organic chemistry reactions (nucleophilic or electrophilic substitution, elimination, rearrangement, addition in the unsaturated system, substitution or addition in the acyl group, enol-based synthesis)

Recommended reading:

Vogel A.I., *Practical Organic Chemistry*

Leonard, J.; Lygo, B.; Procter, G., *Advanced Practical Organic Chemistry*

Any organic chemistry textbook (J. McMurry, *Organic Chemistry*; W. Clayden, *Organic Chemistry;* P.Y. Bruice, *Organic Chemistry;* Smith M.B., March, J., *March's advanced organic chemistry: reactions, mechanisms and structure* etc.)

Assessment methods:

- Tests and laboratory reports

Language of instruction: English