

**PLANNING FORM FOR AN EDUCATIONAL
COURSE UNIT ©
(to be completed by the teacher)**

Programme of Studies: BSc Chemistry

Name of the course unit: Organic Practical Laboratory (forms part of Module OC-3)

Target group: Second year Bachelor students

Level of the unit: Bachelor

Entrance requirements: Inorganic Chemistry (pass), Toxicology (attendance)

Number of ECTS credits: 7.5 (1 credit = 25 hours work).

Credits not awarded separately but as part of a module theory/practice.

Competences to be developed:

1. Capacity for applying knowledge in practice
2. Planning and time management
3. Oral and written communication in the native language
4. Information management skills
5. Capacity to adapt to new situations
6. Decision-making
7. Ability to work autonomously
8. Ethical commitment
9. Concern for quality
10. Problem solving
11. Skills in the safe handling of chemical materials, taking into account their chemical and physical properties, including any specific hazards associated with their use.
12. Skills required for the conduct of standard laboratory procedures involved and use of instrumentation in synthetic work in relation to organic systems.
13. Ability to conduct risk assessments concerning the use of chemicals and laboratory procedures.

Educational activities	Learning outcomes	Estimated student work time in hours	Assessment
Safety lecture with demonstration	Safety procedures, laboratory hazards, emergency procedures.	1	None
Reading and understanding experimental procedures and the reasons behind them. Preparation for carrying out experiments.	Competence in the planning and design of practical experiments.	30	Discussions with teaching assistants
Report-writing	Ability to report an experimental procedure in such a way that it can be carried out successfully and safely by others.	15	Report assessment by teaching assistants
Experiment 1: Natural product isolation	Correct use of laboratory apparatus. Separation, isolation, purification.	8	Written report. Quality of product
Experiment 2: Free radical	Reactivity and selectivity.	8	Written report.

substitution of hydrocarbons	Reactivity and selectivity. Characterisation of mixtures. Correct use of laboratory apparatus.		Quality of product
Experiment 3: Nucleophilic aliphatic substitution	Reactivity and selectivity. Substance characterisation. Correct use of laboratory apparatus.	8	Written report. Quality of product
Experiment 4: Elimination to form CC multiple bonds	Reactivity and selectivity. Characterisation of mixtures. Correct use of laboratory apparatus.	8	Written report. Quality of product
Experiment 5: Electrophilic addition to multiple bonds	Reactivity and selectivity. Substance characterisation. Correct use of laboratory apparatus.	8	Written report. Quality of product
Experiment 6: Electrophilic aromatic substitution 1 (heterosubstituents)	Reactivity and selectivity. Substance characterisation. Correct use of laboratory apparatus.	8	Written report. Quality of product
Experiment 7: Formation of carbonyl groups via oxidation	Reactivity and selectivity. Substance characterisation. Correct use of laboratory apparatus.	8	Written report. Quality of product
Experiment 8: Reduction of carbonyl compounds	Reactivity and selectivity. Substance characterisation. Correct use of laboratory apparatus.	8	Written report. Quality of product
Experiment 9: Addition of heteronucleophiles to aldehydes and ketones	Reactivity and selectivity. Substance characterisation. Correct use of laboratory apparatus.	8	Written report. Quality of product
Experiment 10: Addition of carbon nucleophiles to the carbonyl group	Reactivity and selectivity. Substance characterisation. Characterisation of mixtures. Correct use of laboratory apparatus.	8	Written report. Quality of product
Experiment 11: Electrophilic aromatic substitution 2 (CC bond formation)	Reactivity and selectivity. Substance characterisation. Correct use of laboratory apparatus.	8	Written report. Quality of product
Experiment 12: Organometallic compounds	Reactivity and selectivity. Substance characterisation. Correct use of laboratory apparatus.	8	Written report. Quality of product
Experiment 13: Enolate chemistry and aldol reactions, conjugate addition	Reactivity and selectivity. Substance characterisation. Correct use of laboratory apparatus.	8	Written report. Quality of product
Experiment 14: Hetero-multiple bond systems (nitro- and diazo compounds, etc.)	Reactivity and selectivity. Substance characterisation. Correct use of laboratory apparatus.	8	Written report. Quality of product
Experiment 15: Preparation and modification of polyfunctional compounds	Reactivity and selectivity. Substance characterisation. Correct use of laboratory	8	Written report. Quality of product

and heterocycles	apparatus.		
Revision of material learned, examination.	General overview of subject material.	20	Oral examination

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