1. COURSE DECRIPTION – GENERAL INFORMATION			
1.1. Course teacher	Professor Branka Zorc, PhD	1.6. Year of study	3rd
1.2. Name of the course	**Medicinal Chemistry 2**	1.7. Credit value (ECTS)	5
1.3. Associate teachers	Assoc Professor Zrinka Rajić Džolić, PhD Ivana Perković, PhD	1.8. Type of instruction (number of hours L+E+S+e-learning)	45+0+8
1.4. Study programme (undergraduate, graduate, integrated)	Pharmacy integrated study programme	1.9. Expected enrolment in the course	130
1.5. Status of the course	Compulsory	1.10. Level of use of e-learning (1, 2, 3 level), percentage of instruction in the course on line (20% maximum)	2nd

2. COURSE DESCRIPTION	
2.1. Course objectives	For each therapeutic class described in Medicinal Chemistry 2, the student will have knowledge of: (1) General structural features of agents belonging to the therapeutic class (2) Relevant physicochemical properties (3) Relevant chemical reactions/synthetic pathways for selected drugs (4) Structural and chemical influences on mechanism of pharmacologic action (structure-activity relationship) (5) Chemical influences on pharmacologic/toxicological/therapeutic profiles
2.2. Enrolment requirements and required entry competences for the course	Enrolment requirements: finished lectures of Medicinal Chemistry 1 Required entry competences for the course: knowledge of General and Organic Chemistry and structure, activity and mechanism of action of therapeutic classes elaborated in course Medicinal Chemistry 1
2.3. Learning outcomes at the level of the study programme to which the course contributes	• Expert knowledge on the development of pharmaceuticals: apply fundamental knowledge in natural sciences and medicinal chemistry to define, analyse and propose procedures related to the research, development and production of drugs. • Expert knowledge on pharmacotherapy: apply expert knowledge and skills to provide advice on pharmacotherapy and medical care to patients.
2.4. Expected learning outcomes at the level of the course (4-10 learning outcomes)	Student will be able to: 1. Recognize to which therapeutic group drug substance belongs;

<table>
<tr><td></td><td colspan="6">2. Based on the structure predict/locate therapeutic group;
3. Determine pharmacophore;
4. Explain mechanism of action;
5. Explain synthesis of drug substance.</td></tr>
<tr><td>2.5. Course content broken down in detail by weekly class schedule (syllabus)</td><td colspan="6">LECTURES:
• Introduction to Medicinal Chemistry
• Drug Affecting the Central Nervous System:
General anesthetics, Local anesthetics, Analgesics (Opiates and related analgesics, Nonsteroidal antiinflammatory drugs), Antitussives, Hypnotics, Anticonvulsant/antiepileptic agents, Antiparkinson drugs, Antipsychotic drugs, Antidepressants, Anxiolytic agents, Central nervous system stimulants, Alcoholism therapy
• Drug Affecting the Peripheral Nervous System:
Biochemical aspects of chemical neurotransmission, Chemical neurotransmitters
Drugs affecting cholinergic neurotransmission (cholinergic agonists, cholinergic antagonists, acetylcholinesterase inhibitors, neuromuscular blocking agents)
Adrenergic drugs (Adrenergic agonists, Adrenergic antagonists, Drugs affecting norepinephrine/epinephrine biosynthesis, Drug affecting storage vesicles, Bronchodilators)
• Other Therapeutic Classes:
Antihypertensive drugs, Diuretics, Antianginals, Cholesterol, Antilipidemic drugs, Bile acids, Cardiac glycosides, Antiarrhytmic drugs, Anticoagulants, Coagulants, Fibrinolytics, Antipsoriatic drugs, Antidiabetic drugs, Adrenocorticoids, Sex Hormons, Thyroid Drugs, Vitamins and coenzymes
SEMINARS:
Peptidomimetics, insulin, erythropoetin, melatonin, antidepressants, introduction to drug discovery, vitamin k, photodynamic therapy, doping in sport, q10, glucosamine, therapy of alopecia</td></tr>
<tr><td rowspan="2">2.6. Type of instruction</td><td colspan="2"><u>lectures</u>
<u>seminars</u> and workshops
exercises
online in entirety
mixed e-learning
field work</td><td colspan="2">independent study
multimedia and the internet
laboratory
work with the mentor
(other)</td><td colspan="2">2.7. Comments:</td></tr>
<tr><td colspan="4"></td><td colspan="2"></td></tr>
<tr><td>2.8. Student responsibilities</td><td colspan="6">Lectures and seminars attendance</td></tr>
<tr><td rowspan="6">2.9. Screening of student’s work (specify the proportion of ECTS credits for each activity)</td><td>Class attendance</td><td>1</td><td>Research</td><td></td><td>Practical training</td><td></td></tr>
<tr><td>Experimental work</td><td></td><td>Report</td><td></td><td></td><td></td></tr>
<tr><td>Essay</td><td></td><td>Seminar essay</td><td></td><td>(Other--describe)</td><td></td></tr>
<tr><td>Tests</td><td></td><td>Oral exam</td><td>2</td><td>(Other—describe)</td><td></td></tr>
<tr><td>Written exam</td><td>2</td><td>Project</td><td></td><td>(Other—describe)</td><td></td></tr>
<tr><td colspan="6"></td></tr>
<tr><td>2.10. Grading and evaluation of</td><td colspan="6">Written and oral exam.</td></tr>
</table>

student work over the course of instruction and at a final exam	
2.11. Required literature (available at the library and via other media)	**Title**
	Branka Zorc, Farmaceutska kemija - odabrana poglavlja
	Branka Zorc, Medicinal Chemistry 2 - lecture handouts
2.12. Optional literature	Graham L. Patrick, An Introduction to Medicinal Chemistry", 5th Ed. ISBN-10: 0199697396 - ISBN-13: 978-0199697397
2.13. Methods of monitoring quality that ensure acquisition of exit competences	Learning outcomes are evaluated by written and oral exams.