<table>
<tr><td>COURSE NAME</td><td colspan="7">Introduction to topology</td></tr>
<tr><td>Code</td><td>PMM114</td><td>Year of study</td><td colspan="4">3rd year of undergraduate study</td></tr>
<tr><td>Course teacher</td><td>Vlasta Matijević</td><td>Credits (ECTS)</td><td colspan="4">6</td></tr>
<tr><td rowspan="2">Associate teachers</td><td rowspan="2"></td><td rowspan="2">Type of instruction (number of hours)</td><td>L</td><td>S</td><td>E</td><td></td></tr>
<tr><td>30</td><td></td><td>30</td><td></td></tr>
<tr><td>Status of the course</td><td>compulsory</td><td>Percentage of application of e-learning</td><td colspan="4">30%</td></tr>
<tr><td colspan="7">COURSE DESCRIPTION</td></tr>
<tr><td>Course objectives</td><td colspan="6">The course objective is to introduce students with fundamental concepts and methods in general topology. This gives the basics for more advanced studies in analysis, topolgy and geometry as well as courses building on these topics.</td></tr>
<tr><td>Course enrolment requirements and entry competences required for the course</td><td colspan="6">Successfully completed course: Set theory</td></tr>
<tr><td>Learning outcomes expected at the level of the course (4 to 10 learning outcomes)</td><td colspan="6">It is expected that a student will
- understand fundamental concepts and methods in general topology
- be able to state and prove standard results regarding (compact, connected) topological spaces and continuous functions
- be able to apply the theory in the course to reason about concrete topological spaces and their properties
- be able to decide whether a simple statement about topological spaces and continuous functions is true, providing a proof or counterexample as appropriate
- develop critical and analytical thinking and demonstrate skills in communicating mathematics orally and in writing</td></tr>
<tr><td>Course content broken down in detail by weekly class schedule (syllabus)</td><td colspan="6">- Basic notions (6 hours)
Topological space. Basis and subbasis. The second countable space. Metric topology. Closed sets. Interior, closure and boundary of a set. Neighbourhoods. Local base. The first countable space. Derived set. Density. Separability. Subspace. Product space. Quotient space.
- Separation axioms (2 hours)
T1-spaces. Hausdorff spaces. Regular spaces. Normal spaces.
- Convergence (6 hours)
Limit of a sequence. Accumulation point of a sequence. Pointwise and uniform convergence. Convergence of nets.
- Continuity (6 hours)
Continuous functions. Characterization of continuous functions. Homeomorphism. Embedding. Urysohn characterization of normal spaces. Tietze extension theorem.
- Connectedness (6 hours)
Connected space. Characterization of connected spaces. Pathwise connected space. Components and path-components. Product of (pathwise) connected spaces. Locally (pathwise) connected space.
- Compactness (6 hours)
Compact space. Characterization of compact spaces. Compact metric spaces. Product of compact spaces. Continuous functions on compact spaces. Dini's theorem. Locally compact space. Compactification.</td></tr>
<tr><td>Format of instruction</td><td colspan="6">Lectures and exercises</td></tr>
<tr><td>Student responsibilities</td><td colspan="6">Attendance at lectures and exercises, written assignments, self-study using required and optional literature</td></tr>
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Screening student work *(name the proportion of ECTS credits for each activity so that the total number of ECTS credits is equal to the ECTS value of the course)*	Lecture attendance 0,5 ECTS Exam 5,5 ECTS
Grading and evaluating student work in class and at the final exam	The exam consists of written and oral part. The oral part comes after positively graded (at least 50%) written part Both parts of the exam are equally evaluated in the final grade.
Required literature (available in the library and via other media)	J. Munkres, *Topology*, Pearson Education International, New York, 2000. S. Mardešić, *Matematička analiza u n-dimenzionalnom realnom prostoru I*, Školska knjiga, Zagreb, 1974. J. Dugundji, *Topology*, Allyn and Bacon Inc. Boston, 1966
Optional literature (at the time of submission of study programme proposal)	R. Engelking, *General Topology*, PNW, Warszawa, 1977.
Quality assurance methods that ensure the acquisition of exit competences	Exam statistics and students' quality evaluation through anonymous poles
Other (as the proposer wishes to add)	