Course title: Algebraic Combinatorics

Course code: Semester: Course status: ECTS credits: Contact hours:
II 100 30

Teaching staff: Teacher: Doc. Dr. Primož Šparl

Course content/Topics:
- Symmetries of combinatorial objects
- Group actions
- Coherent configurations and association schemes
- Designs and their symmetries
- Automorphism groups of graphs
- Symmetric graphs – graphs satisfying specific symmetry properties (vertex-transitivity, edge-transitivity, arc-transitivity, half-arc-transitivity)
- Constructions of symmetric graphs
- Structural properties of symmetric graphs (hamiltonicity, semiregularity, (im)primitivity)
- Combinatorial maps and their symmetries

Literature:

Grading:

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<tr>
<th>Criterion</th>
<th>Points</th>
<th>Cut-off points</th>
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<td>1. Homework assignment</td>
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<td>2. Project</td>
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<td>3. Final exam</td>
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Optional Literature:
S. Evdokimov, I. Ponomarenko, Permutation group approach to association schemes, Europ. J. Combin. 30 (2009), 1456-1476
M. Giudici, Quasiprimitive groups with no fixed point free elements of prime order, J. London Math. Soc. (2) 67 (2003), 73–84.