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| 1. Course title: Selected topics in geometry | | | | | |
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| 2. Code: | | 3. Type (lecture, practice etc.): lecture | | | |
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| 4. Contact hours: 2 hoursper week | | 5. Number of credits (ECTS): 2 | | | |
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| 6. Preliminary conditions (max. 3):  - Geometry of curves and surfaces | | | | | |
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| 7. Announced:fall semester, spring semester, both | | | | | |
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| 8. Limit for participants: 20 | | | | | |
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| 10. Responsible teacher (faculty, institute and department):  János Ruff, PhD | | | | | |
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| 11. Teacher(s) and percentage: | | János Ruff | | 100% | |
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| 12. Language: English | | | | | |
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| 13. Course objectives and/or learning outcomes:  Objectives: The main goal of the course is to show new aspects of geometry and to introduce the basic ideas of projective (finite and real) geometries. | | | | | |
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| 14. Course outline  Week 1: Axioms of projective planes. The real projective plane. The O-point model.  Week 2: Finite projective planes, models. Galois planes, combinatorial properties.  Week 3: Desargues’s theorem, Pappus’s hexagon theorem.  Week 4: Collineations, analytic geometry, linear transformations.  Week 5: Central-axial collineations.  Week 6: Pascal’s theorem. Brianchon’s theorem. Conics. Pole and polar.  Week 7: Test  Week 8: Axioms of euclidean geometry.  Week 9: Absolute and hyperbolic geometry, fundamental theorems.  Week 10: Axiom of parallelism and its equivalent forms.  Week 11: Models.  Week 12: Selected theorems from discrete geometry. Selected theorems from convex geometry.  Week 13: Test | | | | | |
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| 15. Mid-semester works  Attending lectures is highly recommended. 2 midterm tests. | | | | | |
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| 16. Course requirements and grading  2 midterm tests are based on lectures, accessible electronic sources and seminar materials.  Grades:  0–39% fail  40–54% acceptable  55–69% average  70–84% good  85–100% excellent | | | | | |
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| 17. List of readings   1. A. Beutelspacher- U. Rosenbaum, Projective Geometry: from foundations to applications, Cambridge University Press, Cambridge. 1988. 2. J. W. P. Hirschfeld: Projective geometries over finite fields, Oxford University Press (1979). | | | | | |
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| 18. Recommended texts, further readings | | | | | |
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| **Date** | 13 April, 2017 | **Prepared by** | János Ruff | | |
| responsible teacher | | |
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| **Endorsed by** | | |  | | |
| László Tóth, PhD  program supervisor | | |