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| 1. Course title: Finite Geometry | | | | | |
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| 2. Code: | | 3. Type (lecture, practice etc.): lecture | | | |
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| 4. Contact hours: 2 hours per week | | 5. Number of credits (ECTS): 3 | | | |
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| 6. Preliminary conditions (max. 3): | | | | | |
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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 course introduces the basic concepts of finite geometries and shows applications. | | | | | |
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| 14. Course outline  Week 1: Definition of the projective plane (axioms), examples. Homogeneous coordinates.  Week 2: Basic combinatorial properties of finite projective planes.  Week 3: Finite affine planes.  Week 4: Desargues’s theorem.  Week 5: Arcs, Bose’s theorem, Lunelli-Sce bound.  Week6: Examples for ovals, hyperovals. Construction for complete arcs.  Week 7: Segre’s theorem.  Week 8: Blocking sets, Bruen-Pelikán theorem, Baer subplanes.  Week 9: Projective spaces of higher dimensions, Plücker coordinates, Klein correspondence.  Week 10: Möbius planes, generalized quadrangles.  Week 11: Designes.  Week 12: Combinatorial applications.  Week 13: Applications to coding theory. Error correcting codes. | | | | | |
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| 15. Mid-semester works  Attending lectures is highly recommended. | | | | | |
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| 16. Course requirements and grading  Written exam is based on lectures, accessible electronic sources and lecture materials.  Grades:  0–50% fail  51–65% acceptable  66–75% average  76–90% good  91–100% 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 | | |