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| 1. Course title: Multiplicative number theory | | | | | |
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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):   * Number theory lecture * Number theory seminar | | | | | |
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| 7. Announced: fall semester,  spring semester, both | | | | | |
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| 8. Limit for participants: | | | | | |
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| 10. Responsible teacher (faculty, institute and department):  László Tóth, PhD (Faculty of Sciences, Institute of Mathematics and Informatics, Department of Mathematics) | | | | | |
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| 11. Teacher(s) and percentage: | | László Tóth, PhD | | 100 % | |
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| 12. Language:English | | | | | |
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| 13. Course objectives and/or learning outcomes:  Objectives: The lecture intends to introduce students to the concepts and properties of multiplicative number theory.  Learning outcomes: students completing the course will have *knowledge* on number theory and vocabulary in the topic. They will be *able* to apply the number theoretic properties, they will have a *competence* of evaluating new mathematical results. Their positive *attitude* towards innovative methods in mathematics will increase significantly. | | | | | |
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| 14. Course outline   1. Elementary prime number theory. 2. The function π(x). 3. The function π(x), cont. 4. Estimates on the n-th prime. 5. The sum of reciprocals of primes. 6. Functions of Cebisev, theorems of Mertens. 7. Asymptotic properties of arithmetic functions. Mean values. 8. Extremal and normal orders. 9. Dirichlet series. 10. Dirichlet series and convolution. 11. Dirichlet characters and theorem of Dirichlet. 12. Proof of the theorem of Dirichlet 1. 13. Proof of the theorem of Dirichlet 2. | | | | | |
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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:  0–39% fail  40–54% acceptable  55–69% average  70–84% good  85–100% excellent | | | | | |
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| 17. List of readings   1. An electronic textbook is available from the lecturer. | | | | | |
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| 18. Recommended texts, further readings   1. T. M. Apostol, Introduction to analytic number theory, Springer, 1976. 2. Hua Loo Keng, Introduction to number theory, Springer, 1982. | | | | | |
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| **Date** | 8 May, 2017 | **Prepared by** |  | | |
| László Tóth, PhD  responsible teacher | | |
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| **Endorsed by** | | |  | | |
| László Tóth, PhD  program supervisor | | |