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| 1. Course title: Algebra 2 | | | | | |
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| 2. Code: | | 3. Type (lecture, practice etc.): seminar | | | |
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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):   * Algebra 1 lecture * Algebra 1 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: | | János Ruff, PhD | | 100 % | |
| András Frigyik, PhD | | 100 % | |
| Ilona Simon, PhD | | 100 % | |
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| 12. Language:English | | | | | |
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| 13. Course objectives and/or learning outcomes:  Objectives: It is intended to solve exercises and problems on the the basic concepts and properties of polynomials and linear algebra.  Learning outcomes: students completing the seminar will have *knowledge* on basic algebra, linear algebra and vocabulary in the topic. They will be *able* to apply the algebraic 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. Algebraic equations of higher degree. Fundamental theorem of algebra. 2. Algebraic equations of degree three and four. 3. Rings of polynomials over fields. Unique ireducible factorization. 4. Irreducible polinomials in the rings of polynomials with rational, real and complex coefficients. Rational field of functions. 5. Rings of polynomials of several variables. Symmetric polynomials. 6. Midterm exam 1 7. Vector spaces, examples. Base, dimension, subspaces. 8. Factor spaces, direct sums. Linear transforms, their matrices. Spaces of images and kernels. 9. Determinants. 10. Algebra of matrices, invertible matrices, rank. 11. Systems of linear equations. Gauss’ rule, Cramer’s rule. 12. Eigenvalues, eigenvectors, characteristic polynomials. 13. Midterm exam 2 | | | | | |
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| 15. Mid-semester works  Two midterm exams. | | | | | |
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| 16. Course requirements and grading  Two midterm exams.  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. Norman, Christopher W. Undergraduate algebra: a first course. Oxford University Press, USA, 1986. | | | | | |
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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 | | |