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| 1. Course title: Scientific Programming in Python | | | | | |
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| 2. Code: | | | 3. Type (lecture, practice etc.): practice | | |
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| 4. Contact hours: 0+2 hoursper week | | | 5. Number of credits (ECTS): 2 | | |
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| 6. Preliminary conditions (max. 3):   * Basics of Python I. * Linear Algebra II | | | | | |
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| 7. Announced:fall semester, spring semester, both | | | | | |
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| 8. Limit for participants: 20 per study groups | | | | | |
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| 10. Responsible teacher (faculty, institute and department):  András Bodor (Faculty of Science, Institute of Mathematics and Informatics, Department of Applied Mathematics) | | | | | |
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| 11. Teacher(s) and percentage: | | | András BODOR | | 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 scientific applications of the Python programming language.  Learning outcomes: Students completing the course will have an overview of the Scipy framework. They will be *able* to solve scientific programming problems and to use third party Python programming libraries. | | | | | |
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| 14. Course outline   1. Quick overview of the Python language. 2. The Scipy framework. 3. Numpy I. Linear algebra overview, representation of matrices. 4. Numpy II. Operations on matrices. 5. Matplotlib I. Elementary graphics. 6. Matplotlib II. Advanced graphics. 7. Minimization, optimization. 8. Interpolation. 9. Integration, differential equations. 10. Sympy I. 11. Sympy II. 12. Studying a complex problem selected with the student I. 13. Studying a complex problem selected with the student II. | | | | | |
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| 15. Mid-semester works | | | | | |
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| 16. Course requirements and grading  Grades are determined upon a homework assignment | | | | | |
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| 17. List of readings   1. Eli Bressert: SciPy and NumPy: An Overview for Developers, O'Reilly 2012 ISBN-13: 978-1449305468 | | | | | |
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| 18. Recommended texts, further readings   1. G. Varoquaux, E. Gouillart, O. Vahtras (ed.) The Python Scipy Lecture Notes: http://www.scipy-lectures.org/ | | | | | |
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| **Date** | 13 April, 2017 | **Prepared by** | |  | |
| András Bodor  responsible teacher | |
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| **Endorsed by** | | | |  | |
| Dr. Mátyás Koniorczyk program supervisor | |