



UNIVERSITATEA DIN ORADEA
FACULTATEA DE INGINERIE ELECTRICĂ ȘI
TEHNOLOGIA INFORMAȚIEI

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Topics for the contest

**for Associate Professor, position 10, Department of Computers and
Information Technology, 2021-2022 academic year**

Applied Informatics II

1. Introduction to Computers and Programming. Python programming language
2. Software Development, Data Types, and Expressions
3. Decision and Repetition Structures
4. Design with Functions. Recursion
5. Files and Exceptions
6. List and Tuples. Strings. Dictionaries and Sets
7. Design with Classes. Inheritance
8. Simple Graphics
9. GUI Programming

Formal Languages and Translators

1. Introduction. Compiler structure.
2. Lexical analysis
3. Syntactic analysis
4. Top-down parsing
5. Bottom-up parsing
6. Semantic analysis
7. Object code generation

Artificial Intelligence

1. Introduction to AI. History, Definitions, Domains of AI. General notions
2. Motivation for agents. Definitions of agents. Multi-agent systems. Agent intelligence. Example.
Research sub-areas
3. Search strategies
4. Uninformed search
5. Informed search
6. Local search algorithms
7. Evolutionary calculation. Genetic algorithms
8. Optimization with ant colonies
9. The problem of satisfying the restrictions, strategies in games.
10. General issues related with neural networks
11. General presentation of Machine Learning



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Bibliography for the contest

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Applied Informatics II

10. Starting Out with Python, 5th Edition, Tony Gaddis, published by Pearson Education © 2021, ISBN 978-0-13-444432-1
11. Fundamentals of Python: First Programs, 2nd Edition, Author: Kenneth Lambert, Publisher: Cengage Learning, 2018, ISBN-13: 978-1-337-56009-2
12. Building Python Programs, Author: Stuart Reges, Marty Stepp, Allison Obourn, published by Pearson Education © 2020

Formal Languages and Translators

1. Aho, Lam, Sethi and Ullman, Compilers: Principles, Techniques, and Tools, 2nd Edition, published by Pearson, 2007
2. Loudon, K. "Compiler Construction. Principles and Practice", PWS Publishing Company 1997, <http://www.cs.sjsu.edu/faculty/louden/comptxt/>, College of Science, San Jose State University
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Artificial Intelligence

12. S. Russell, P. Norvig. Artificial Intelligence: A Modern Approach, Pearson, 2021, <http://aima.cs.berkeley.edu/>
13. Vladu Ecaterina – Inteligența artificială, Editura universității din Oradea, ISBN 973-685-123-0
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15. A.Florea, A. Boangiu. Elemente de Inteligența Artificială

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