

**UNIVERSITATEA OVIDIUS DIN CONSTANȚA  
FACULTATEA DE MATEMATICĂ ȘI INFORMATICĂ**

**ADMITEREA 2023 LA PROGRAMUL DE MASTER:  
*SECURITATE CIBERNETICĂ ȘI ÎNVĂȚARE AUTOMATĂ ÎN LIMBA  
ENGLEZĂ*  
- *CYBER SECURITY AND MACHINE LEARNING*-**

**TEME PROPUSE PENTRU ESEU<sup>1</sup>**

1. Information security management according to ISO/IEC 27002:2005
2. Microsoft Security Development Lifecycle (SDL)
3. Object oriented paradigm. Concepts, principles and applications
4. Software process models. Agile software development
5. Conceptual modelling. UML class diagram
6. Mathematical Induction and Recursive Data Types
7. Theorems on prime numbers
8. Access Control Lists
9. Digital Certificates
10. Distribution of Public Keys
11. Eigenfaces algorithm.
12. Tensor-like algorithms for face recognition: representation, data manipulation, folding and unfolding tensors, algorithms A1 and A2.
13. Search engines: TF, TF-IDF, and Okapi models.
14. Artificial neural networks for modelling the logical operators NOT, AND, OR, XNOR (pre-trained models).
15. Swarm Intelligence - algorithms and applications
16. Evolutionary computation - algorithms and applications
17. Nature inspired metaheuristics for clustering problems
18. Evolutionary algorithms for regression problems
19. A comparison between relational and NoSQL databases
20. Conceptual Modeling for transactional Database Systems
21. Logical Modeling for transactional Database Systems
22. Fundamentals of Relational Database Management Systems

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<sup>1</sup> Candidatii isi pot alege si o tema care nu este inclusa in aceasta lista cu conditia sa fie relevanta pentru programul de master Securitate Cibernetică și Învățare Automată (Cyber Security and Machine Learning)

## BIBLIOGRAFIE ORIENTATIVĂ<sup>2</sup>

1. E. Petac, *Rețele de calculatoare/Computer Networks*, Lecture notes, 2021
2. C. M. Puchianu, *Ingineria sistemelor soft/Software engineering*, Lecture notes, 2021
3. E. Pelican, *Optimization Techniques*, Lecture notes, 2021
4. E. Pelican, *Scientific Computing Algorithms (Pattern Recognition)*, Lecture notes, 2020
5. L. D. Șerbănați, C. M. Bogdan, *Dezvoltarea orientata spre obiecte a programelor in Java*, volumul I, Editura Politehnica Press, ISBN 978-606-515-109-3, 2/e, 2011, 249 pag.
6. C. M. Bogdan, L. D. Șerbănați, *Dezvoltarea orientata spre obiecte a programelor in Java*, volumul II, Editura Politehnica Press, ISBN 978-606-515-109-3, 2/e, 2011, 363 pag
7. E. Lehman, F. Thomson Leighton, A. R. Meyer, *Mathematics for Computer Science*, available at [https://ocw.mit.edu/courses/electrical-engineering-and-computer-science/6-042j-mathematics-for-computer-science-spring-2015/readings/MIT6\\_042JS15\\_textbook.pdf](https://ocw.mit.edu/courses/electrical-engineering-and-computer-science/6-042j-mathematics-for-computer-science-spring-2015/readings/MIT6_042JS15_textbook.pdf)
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11. I. Goodfellow, Y. Bengio, A. Courville, *Deep Learning Book*, MIT Press, 2016
12. Mihaela Breaban and Henri Luchian, 2011. PSO aided k-Means clustering introducing connectivity in k-Means. In GECCO (Vol. 11, pp. 193-194).
13. Zhu, Z.F., Hui, X.B., Cao, Y.Q. and Lian, W.X., 2013. The Research on Modified K-Means Algorithm Based on GA&SA. In *Applied Mechanics and Materials* (Vol. 347, pp. 3242-3246). Trans Tech Publications Ltd.
14. Saxena, Amit, Mukesh Prasad, Akshansh Gupta, Neha Bharill, Om Prakash Patel, Aruna Tiwari, Meng Joo Er, Weiping Ding, and Chin-Teng Lin. "A review of clustering techniques and developments." *Neurocomputing* 267 (2017): 664-681
15. Cranganu, Constantin, and Elena Bautu. "Using gene expression programming to estimate sonic log distributions based on the natural gamma ray and deep resistivity logs: a case study from the Anadarko Basin, Oklahoma." *Journal of Petroleum Science and Engineering* 70, no. 3-4 (2010): 243-255.
16. Ramzan, Shabana, Imran Sarwar Bajwa, and Razaq Kazmi. "An intelligent approach for handling complexity by migrating from conventional databases to big data." *Symmetry* 10, no. 12 (2018): 698.
17. Györödi, C., Györödi, R., Pecherle, G. and Olah, A., 2015, June. A comparative study: MongoDB vs. MySQL. In 2015 13th International Conference on Engineering of Modern Electric Systems (EMES) (pp. 1-6). IEEE
18. Bonabeau E, Marco DD, Dorigo M, Théraulaz G, Theraulaz G. *Swarm intelligence: from natural to artificial systems*. Oxford university press; 1999. <http://docshare04.docshare.tips/files/20663/206639475.pdf>
19. Luke, S. (2013). *Essentials of Metaheuristics*. Lulu, 2013. <https://cs.gmu.edu/~sean/book/metaheuristics/Essentials.pdf>

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<sup>2</sup> Candidatii pot folosi orice alte resurse bibliografice, cu conditia sa fie mentionate in sectiunea Bibliografie a eselui

20. Băutu, E. and Băutu, A., 2009. *Programare genetică: teorie și aplicații*. Editura Universității "Alexandru Ioan Cuza".
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22. Mancas, Christian. *Conceptual Data Modeling and Database Design: A Fully Algorithmic Approach*, Volume 1: The Shortest Advisable Path. Apple Academic Press, 2019.
23. Avi Silberschatz, Henry F. Korth, S. Sudarshan, *Database System Concepts*, McGraw-Hill, January 28, 2010. <http://codex.cs.yale.edu/avi/db-book/>
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26. G.C. Simsion, G.C. Witt, *Data Modeling Essentials*, Morgan Kaufmann Publishers, Third Edition 2005
27. S. Sumathi, S. Esakkirajan, *Fundamentals of Relational Database Management Systems*, Springer 2007
28. <https://www.iso27001security.com/html/27001.html>
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