BIBLIOGRAFIE

C.S. I Dr. Lucian Beznea

Bibliografie

1. F. Bach, *Learning theory from first principles*. The MIT Press, 2024

2. M. Viana, J. M. Espinar, *Differential equations: A dynamical systems approach to theory and practice*. American Mathematical Society, 2021

C.S. I Dr. Eugen Mihailescu

1) P. Walters, An Introduction to Ergodic Theory, Springer, 2000.

2) C. Robinson, Dynamical Systems: Stability, Symbolic Dynamics, and Chaos (Studies in Advanced Mathematics 28), CRC Press, 1998.

3) R. Bowen, Equilibrium States and the Ergodic Theory of Anosov Diffeomorphisms, second revised edition, Lecture Notes in Mathematics 470, Springer, 2008.

C.S. I Dr. Laurențiu Leuştean

Tematică:

1. Proof mining în optimizare
2. Logică de ordinul întâi, matching logic şi logici modale

Bibliografie:

1. U. Kohlenbach, Applied Proof Theory: Proof Interpretations and Their Use in Mathematics, Springer (2008)
2. H.H. Bauschke, P.L. Combettes, Convex Analysis and Monotone Operator Theory in Hilbert Spaces, Springer (2nd edition) (2017)
3. J.D. Monk, Mathematical Logic, Springer (1976)
4. P. Hinman, Fundamentals of Mathematical Logic, A K Peters (2005)
5. G. Roşu, Matching logic, Logical Methods in Computer Science, 13(4):1–61 (2017)
6. X. Chen, Matching μ-logic, PhD Thesis, University of Illinois Urbana-Champaign (2023)
7. P. Blackburn, M. de Rijke, Y. Venema, Modal logic, Cambridge University Press (2001)

C.S. I Dr. Vicențiu Pașol

Bibliography

J.-P. Serre, *Local Fields*.

K. Iwasawa, *Local Class Field Theory*.

J. H. Silverman, *The Arithmetic of Elliptic Curves*.

L. C. Washington, *Elliptic Curves: Number Theory and Cryptography*.

Ãlvaro Lozano-Robledo, *Elliptic Curves, Modular Forms, and Their L-functions*.

Expected Background for the Examination

Candidates are expected to master local fields, discrete valuations, ramification, residue fields, formal groups, trace and norm maps, and local reciprocity.

They should be comfortable with elliptic curves over number fields, local fields, and finite fields, including reduction, torsion, isogenies, heights, and the Mordell--Weil theorem.

They should also understand Frobenius, point counting over finite fields, modular forms attached to elliptic curves, and the basic role of L-functions in arithmetic.

CS. I Oana-Valeria Stamate,

Bibliografie pentru admitere la doctorat, 2026

1. Baiocchi, C., Capelo A., Variational and Quasivariational Inequalities, John Wiley & Sons, 1978.
2. Barbu, V., Nonlinear Differential Equations of Monotone Types in Banach Spaces, Springer, 2010.
3. Beznea,L, Lupașcu-Stamate O., Measure-valued discrete branching Markov processes, *Trans. Amer. Math. Soc.* **368** (2016), no. 7, 5153-5176.
4. L. Beznea, O. Lupascu, A.-G. Oprina, A unifying construction for measure-valued continuous and discrete branching processes. In: *Complex Analysis and Potential Theory*, CRM Proceedings and Lecture Notes, vol. **55**, Amer. Math. Soc., Providence, RI, 2012, pp. 47-59.
5. Brézis. H. , Functional Analysis, Sobolev Spaces and Partial Differential Equations, Springer, New York, 2011.
6. Delmas, J.-F. , Jourdain B., *Modèles aléatoires : Applications aux* sciences de l'ingénieur et du vivant, Mathématiques et Applications, tome 57, Springer, 2006.
7. A.M. Gassous, A. Răscanu, E. Rotenstein, Stochastic variational inequalities with oblique subgradients, *Stochastic Process. Appl.* **122** (No. 7) (2012) 2668–2700.
8. Kubo, M., *Quasi-Subdifferential Operators and Evolution Equations*, Discrete and Continuous Dynamical Systems, Supplement 2013, 447-456.
9. Li, Z., Measure-Valued Branching Markov Processes, 2nd ed., Probability Theory and Stochastic Modelling, Vol. 103, Springer, 2022.

10. Pardoux, E., Răşcanu, A., Stochastic differential equations, Backward SDEs, Partial differential equations, Stochastic Modelling and Applied Probability, 69, XVII, Springer, 2014.
11. Yosida,K., Functional Analysis, 6th Edition, Springer, 1980.

C.S. I Dr. Sergiu Moroianu

1) M. Zworski, Semiclassical Analysis, AMS (2012)

2) N. Berline, E. Getzler, M. Vergne, Heat kernels and Dirac operators, Springer, ed. 2, (2004)

Tematica: Operatori pseudodiferentiali, operatori semiclasici, elipticitate, asimptotica valorilor proprii.

C.S. I Dr. Tudor Barbu

Tematică și bibliografie pentru concurs de admitere la doctorat

Conducător ştiinţific: CS I Dr. habil. Tudor Barbu

Tematica:

1. Algoritmi de recunoaștere a formelor și învațare automată [1-3]

2. Tehnici de programare a algoritmilor și structuri de date [4, 5]

3. Rețele neuronale de învățare profundă (*deep learning*) [6-9]

4. Procesarea și analiza imaginilor digitale statice și video [10 - 15]

5. Tehnici de autentificare biometrică [16-18]

6. Inteligență artificială și viziune computerizată [19, 20]

7. Teoria grafurilor cu aplicații [21]

8. Modele bazate pe ecuații cu derivate parțiale aplicate în procesarea și analiza de imagini, viziunea computerizată și inteligența artificială [22-24]

Bibliografie:

1. C. Bishop, *Pattern Recognition and Machine Learning*, Springer, 2006.

2. R. O. Duda, P. E. Hart, D. G. Stork, *Pattern classification* (2nd edition), Wiley, NY, 2001.

3. K. Koutroumbas, S. Theodoridis, *Pattern Recognition* (4th ed.), Boston: Academic Press, 2008.

4. J. E. Hopcroft, J. D. Ullman, A. V. Aho, *Data structures and algorithms*, Vol. 175, Boston, MA, USA:: Addison-wesley, 1983.

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6. I. Goodfellow, Y. Bengio, A. Courville, *Deep learning*, MIT press, 2016.

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12. C. Vertan, *Prelucrarea si analiza imaginilor*, Editura Printech, Bucuresti, 1999.

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15. V. Sharma, M. Gupta, A. Kumar, D. Mishra, Video processing using deep learning techniques: A systematic literature review, *IEEE Access*, 9, pp. 139489-139507, 2021.

16. A. K. Jain, A. Ross, K. Nandakumar, *Introduction to biometrics*, Springer Science & Business Media, 2011.

17. R. M. Bolle, J. H. Connell, S. Pankanti, N. K. Ratha, A. W. Senior, *Guide to biometrics*, Springer Science & Business Media, 2013.

18. T. Barbu, *Biometric Authentication Techniques* (in Romanian), Romanian Academy Publishing House, Bucharest, 2012, ISBN 978-973-27-2144-5.

19. W. Ertel, *Introduction to artificial intelligence*. Springer Nature, 2024.

20. L. Shapiro, G. Stockman, *Computer Vision*, Prentice-Hall, New Jersey, USA, 2001

21. J. A. Bondy, U. S. R. Murty, *Graph Theory*, Springer, 2008, ISBN 978-1-84628-969-9.

22. J. Weickert, *Anisotropic Diffusion in Image Processing*, European Consortium for Mathematics in Industry, B. G. Teubner, Stuttgart, Germany, 1998.

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24. T. Barbu, *Digital Image Processing, Analysis and Computer Vision Using Nonlinear Partial Differential Equations*, Vol. 1211, Springer Nature, 2025.

C.S. I Dr. Răzvan Diaconescu

Bibliorafie

1. S. Awodey. Category theory, Oxford University Press, 2009.

Prof. Dr. Marius Leordeanu

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1. Duda, Richard O., Peter E. Hart, and David G. Stork. *Pattern classification*. John Wiley & Sons, 2012. Ch 1, 2, 3, 4, 5, 6, 8, 10, Appendix

2. Alammar, Jay, and Maarten Grootendorst. Hands-on large language models: language understanding and generation. " O'Reilly Media, Inc.", 2024.

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5. Chollet, Francois, and François Chollet. Deep learning with Python, 2021.

C.S. I. Dr. Cristian Sminchișescu

Bibliografie examen doctorat Cristian Sminchisescu, 2026

- Goodfellow, I., Bengio, Y., & Courville, A. (2016). ***Deep Learning***. MIT Press.
- Sutton, R. S., & Barto, A. G. (2018). ***Reinforcement Learning: An Introduction***. 2nd edition. MIT Press.
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- Vaswani, A., Shazeer, N., Parmar, N., et al. (2017). **Attention Is All You Need**. *NeurIPS*.
- Assran, M., Duval, Q., Misra, I., Bojanowski, P., Vincent, P., Rabbat, M., LeCun, Y., & Ballas, N. (2023). **Self-Supervised Learning from Images with a Joint-Embedding Predictive Architecture**. *CVPR*.
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- Goodfellow, I., Pouget-Abadie, J., Mirza, M., et al. (2014). **Generative Adversarial Nets**. *NeurIPS*.
- Wan Team, Wang, A., Ai, B., Wen, B., et al. (2025). **Wan: Open and Advanced Large-Scale Video Generative Models**. arXiv:2503.20314.