



DISCIPLINE ACADEMIC SHEET ACADEMIC YEAR 2025 – 2026

1. PROGRAMME DATA

1.1. Higher Education Institution	UNIVERSITY OF CRAIOVA
1.2. Faculty	Automation, Computers and Electronics
1.3. Department	Computers and Information Technology
1.4. Field of Study	Computers and Information Technology
1.5. Study level	L(License / Undergraduate)
1.6. Organizational form	IF
1.7. Study Program (name/code) /Qualification	Computers / L2060101010

2. DISCIPLINE DATA

2.1 Discipline Name				Probability Theory and Mathematical Statistics			
2.2 Course Activities Holder				Associate Professor Florian MUNTEANU Ph.D.			
2.3. Practical Activities Holder				Associate Professor Florian MUNTEANU Ph.D.			
2.4. Study Year	II	2.5. Semester	I	2.6. Evaluation type	V	2.7. Discipline regime	DFA

3. ESTIMATED TOTAL TIME (hours per semester of teaching activities)

3.1. Number of hours per week	3	in which: 3.2 course	2	3.3. sem./lab./pr.	1
3.4. Total hours of curriculum	42	in which: 3.5 course	28	3.6. sem./lab./pr.	14
3.7. Time distribution - hours/week					hours
Study after manual, course support, bibliography and notes					14
Additional documentation in library, on specialized electronic platforms and field					7
Training seminars / labs, homework, portfolios and essays					7
Tutorial					-
Examinations					3
Other activities.....					2
Total hours per individual activities					33
3.8. Total hours per semester					75
3.9. Number of credits					3

4. PRECONDITIONS (where appropriate)

4.1. of curriculum	Students must have acquired specialized knowledge in the following subjects: Elementary Mathematics, Linear Algebra and Geometry, Mathematical Analysis, Special Chapters in Mathematics.
4.2. of competence	Working with algebraic formula, calculus, derivation of one variable or more variable real function, integration of real functions, improper integrals, integrals with parameters.

5. CONDITIONS (where appropriate)

5.1. of the course	Didactic activity with physical presence. The course is taught using the video projector. For explanations, examples, some demonstrations and answers to questions in the room, the board is used. Also, to answer certain questions from students and for explanations, examples, demonstrations is used blackboard and oral presentation. It provides ongoing support in print and in electronic format with free access, on the specially created virtual classroom, Google Classroom, but also on the Student Records platform related to the official website of the University of Craiova, https://evstud.ucv.ro/. To make the teaching activity more efficient, the Google Classroom platform is used for the dissemination of teaching materials, the collection of remarks and homework, the posting of evaluation results. Teaching is as follows: • 70% theoretical presentation based on support material (slides) • 30% interactive activity (discussions with students) Course and seminar support is provided in electronic format and access to updated documentation is provided. To make teaching activity more efficient, the Google Classroom platform is used for the dissemination of teaching materials, discussions, observations, collection of assignments and posting of evaluation results.
5.2. of the seminar	Didactic activity with physical presence. The seminar takes place in a room equipped with a blackboard. Together with students give explanations, guidance and solve practical applications to the blackboard, exercises and problems that illustrate the concepts presented in class. Students receive homework. In order to make the seminar activity more efficient, the Google Classroom platform is used to disseminate teaching materials, collect remarks, assignments and post evaluation results. All necessary teaching materials will be made available to students in electronic format on Google Classroom, and https://evstud.ucv.ro/.

6. COURSE OBJECTIVES – expected learning outcomes that are supported by completing and passing the course

Knowledge	Student/Graduate: 1. identifies and describes basic concepts, principles and methods in mathematics, strictly necessary for the formation of their professional skills. The aim is the introduction of the fundamental notions basic elements of probability theory (discrete random variables, the main probability distributions), simulating random variables, using random patterns based on stochastic processes (Markov chains, queue systems), estimating parameters in statistical models, linear regression, regression in statistics and using statistical models in artificial intelligence. 2. explains and interprets theoretical results in mathematics. The seminar aims to consolidate theoretical knowledge and create calculation skills through practical applications, exercises and problems.
Skills (Abilities)	Student/Graduate: 1. operates with basic mathematical concepts, principles and methods. 2. solve mathematical problems with applicability in engineering and validate the solution obtained. 3. performs engineering and economic calculations of medium complexity and associates them with graphical representations or specific to computer-aided design. 4. applies criteria and evaluation methods for the identification, modeling, experimentation, analysis and qualitative and quantitative assessment of phenomena and processes specific to the fundamental field using digital technologies. 5. acquires and processes data, interprets theoretical mathematical and experimental results.

Responsibility and autonomy	Student/Graduate:
	1. applies the values of ethics and deontology of the engineering profession.
	2. practices logical reasoning, evaluation and self-assessment in decision-making.
	3. communicates effectively about engineering activities with a wide range of audiences.
	4. is engaged in lifelong learning to acquire and implement knowledge, as needed, using appropriate learning strategies.
	5. promotes dialogue, cooperation, respect for others and interculturality.

8. CONTENT

7.1. Course	The method of implementation	Teaching methods	Allocated time (hours)
1. Events and probabilities, conditioned probabilities	face to face	The teaching is face to face, explanatory and interactive, using the video projector and the blackboard. One ensures electronic course support and access to updated documentation. The teaching process has the following structure: - 70% theoretical presentation, based on the course support; - 30% interactive activity with the students. To make the teaching activity more efficient, the Google Classroom platform is used for the dissemination of teaching materials, the collection of remarks, homework and the posting of evaluation results.	2
2. Discrete random variables. Mean, variance, moments			2
3. Classical discrete random variables. The main examples			2
4. Continuous random variables, Markov inequality, Chebyshev inequality			2
5. The main continuous probability distributions. Simulation of random variables			2
6. Random vectors, Co-variance. Correlation coefficient			2
7. Law of Large Numbers. Central Limit Theorem. Applications			2
8. The notion of stochastic process. Markov property			2
9. Markov chains. Examples and applications			2
10. Introduction in statistics for engineering and inferential statistics			2
11. Estimators of parameters of statistical models (mean, variance, co-variance, maximum veracity). Exercises			2
12. Estimating confidence intervals			2
13. Regression in statistics. Linear regression, the least squares straight line and the one-sample correlation coefficient associated with a two-dimensional random variable			2
14. Statistical models in artificial intelligence. The basic of Bayesian statistics. Bayesian networks			2
Bibliography:			
1. Axler, S., Linear Algebra Done Right, Springer, San Francisco, ISBN 978-3-031-41025-3, 2024			
2. V. Balan, D.C. Burada, Matematica si statistica, Ed. Arves, Craiova 2011			
3. J. L. Johnson, Probability and Statistics for Computer Science, Wiley & Sons, 2003			
4. Gh. Mihoc, N. Micu, Teoria probabilitatilor si statistica matematica, Bucuresti, Editura Didactica si Pedagogica, 1980.			
5. E. Petrisor, Probabilitati si statistica. Aplicatii în economie și inginerie, Editura Politehnica, Timisoara,			

2007
6. E. Petrisor, Modele probabilistice si statistice in stiinta si ingineria calculatoarelor, Editura Politehnica, Timisoara, 2008
7. E. Petrisor, Probabilități și statistică cu aplicatii in computer science, curs si culegere de probleme, online.
8. I. Vladimirescu, Probabilitati si statistica, Note de curs, Informatica, Universitatea din Craiova, 1996.
9. I. Vladimirescu, Teoria probabilitatilor si statistica matematica, Culegere de probleme, Editura Universitaria, 2002.
10. F. Munteanu, O introducere în teoria probabilităților și statistică matematică, Note de curs, 100 pagini, suport de curs și seminar disponibil online, pe Google Classroom și pe platforma https://evstud.ucv.ro/

7.2. Seminar/laboratory/project	The method of implementation	Teaching methods	Allocated time (hours)
1. Computation of probabilities for elementary events. Examples.	face to face	The seminar is developed face to face, interactively with the students, by ensuring also electronic support. Activities: - 80% effective deployment of seminar; - 20% interpreting the results and discussions with students. To streamline the activity at the seminar, the Google Classroom platform is used for the dissemination of teaching materials, the collection of remarks and homework, the posting of evaluation results.	2
2. Applications with discrete random variables, distribution functions			2
3. Applications with continuous random variables. Examples			2
4. Central Limit Theorem. Normal approximation of the binomial distribution. Examples and applications			2
5. Markov chains. Examples and applications			2
6. Estimators of parameters of statistical models (mean, variance, co-variance, maximum veracity). Exercises			2
7. Linear regression, the least squares straight line and the one-sample correlation coefficient associated with a two-dimensional random variable			2

Bibliography:

1. Axler, S., Linear Algebra Done Right, Springer, San Francisco, ISBN 978-3-031-41025-3, 2024
2. V. Balan, D.C. Burada, Matematica și statistica, Ed. Arves, Craiova 2011.
3. J. L. Johnson, Probability and Statistics for Computer Science, Wiley & Sons, 2003
4. Gh. Mihoc, N. Micu, Teoria probabilitatilor și statistica matematica, Bucuresti, Editura Didactica si Pedagogica, 1980.
5. E. Petrisor, Probabilitati si statistica. Aplicații în economie și inginerie, Editura Politehnica, Timisoara, 2007
6. E. Petrisor, Modele probabilistice si statistice in stiinta si ingineria calculatoarelor, Editura Politehnica, Timisoara, 2008
7. E. Petrisor, Probabilități și statistică cu aplicatii in computer science, curs si culegere de probleme, online.
8. I. Vladimirescu, Probabilitati si statistica, Note de curs, Informatica, Universitatea din Craiova, 1996.
9. I. Vladimirescu, Teoria probabilitatilor și statistica matematica, Culegere de probleme, Editura Universitaria, 2002.
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8. Correlating the content of the discipline with the expectations of representatives from the epistemic community, professional associations and representative employers in the field related to the program

Course content was discussed with representatives of

- Department of Computer Science and Information Technology, Faculty of Automation, Computers and Electronics
- Faculty of Automation, Computers and Electronics, University of Craiova

9. EVALUATION

Activity Type	9.1. Evaluation criteria	9.2. Evaluation methods	9.3. Final mark weight
9.4. Course	- The understanding the problem - The mathematical formulation - The resolution of the problem	Evaluations: written exam: two hours duration, four practical subjects, each subject being appreciated through a score from 1 to 10, including the free point. The score from the written exam is the arithmetic mean of the scored obtained to the four subjects. Final mark wight of the written exam: 60%. The evaluation of the continuous assessments is made during the semester, based on a partial exam, the final mark weight of the partial exam being 30 %.	60%
9.5. Seminar	- The development degree of practical abilities and capability to work with the notions, techniques, and fundamental methods	Continuous assessment and seminar mark weight examination.	40%
9.6. Minimum standard of performance			
The final mark if deduced by using the formula: $N_{\text{final}} = 0.6 \times N_{\text{WrittenExam}} + 0.4 \times N_{\text{Seminar}}$, where: Nwritten Exam is the score obtained at the written exam; NSeminar is the mark for the student activity at the seminar. The estimate of the final mark is made by rounding to integer mark of the final scores. The minimum mark to promote the exam is 5.			

Date of Completion	Signature of the Course Activities Holder,	Signature of the Practical Activities Holder,
23.08.2025		

Date of Approval in the Department	Signature of the Department Director,
25.08.2025	Ș.l.dr.ing. Nicolae ENESCU

Date of Approval in the Faculty	Signature of the Dean,
	Prof.dr.ing. Dorin ȘENDRESCU