Universitatea de Vest din Timişoara

SYLLABUS / FIȘA DISCIPLINEI

1. Information on the study programme / Date despre programul de studii

1.1. Institution / Instituția de învățământ superior	Universitatea de Vest din Timișoara
1.2. Faculty / Facultatea	Matematică și Informatică
1.3. Department / Departamentul	Computer Science (Informatică)
1.4. Study program field	Computer Science (Informatică)
1.5. Study cycle/ Ciclul de studii	MSc / master
1.6. Study programme / Programul de studii / calificarea*	Artificial Intelligence and Distributed Computing

2. Information on the course / Date despre disciplină

2.1. Title of the course / Denumirea disciplinei	Techniques for Scientific Work					
2.2. Teacher in charge of the laboratory / Titularul activităților de laborator	Prof. Dr. Tudor Jebelean					
2.4. Study year / Anul de studii	2	2.5. Semester / Semestrul	1	2.6. Examination type / Tipul de evaluare: E(xam)/C(olloquim)	E	2.7. Course type / Regimul disciplinei: M(andatory)/ E(lective)/ F(acultative) — M

3. Estimated study time (number of hours per semester) /Timpul total estimat (ore pe semestru al activităților didactice)

3.1. Attendance hours per week / Număr de ore pe săptămână	3	out of which din care: 3.2 lecture/ curs	0	3.3. seminar/laborator	3
3.4. Attendance hours per semester / Total ore din planul de învățământ	42	out of which: 3.5 lecture / curs	0	3.6. seminar/laborator	42

Distribution of the allocated amount of time / Distribuția fondului de timp*	hours/ ore
Individual study /Studiu după manual, suport de curs, bibliografie și notițe	28
Supplementary documentation at library or using electronic repositories / Documentare suplimentară în bibliotecă, pe platformele electronice de specialitate	14
Preparing for laboratories, homework, reports etc. /Pregătire seminarii/laboratoare, teme, referate, portofolii și eseuri	38
Exams / Examinări	4
Tutoring / Tutorat	14

3.7. Total number of hours of individual study / Total ore studiu individual	98
3.8. Total number of hours per semester / Total ore pe semestru	140
3.9. Number of credits (ECTS) / Număr de credite	6

4. Prerequisites (if it is the case) / Precondiții (acolo unde e cazul)

4.1. curriculum / de curriculum	Logic, Programming, Algorithmics, Formal languages, Algebra
4.2. skills / de competențe	Programming, capacity for individual and team work.

5. Requirements (if it is the case) / Condiții (acolo unde e cazul)

5.1. for the lecture / de desfășurare a cursului	
5.2. for the seminar, laboratory / de desfășurare a seminarului/laboratorului	Computer/Calculator

6. Acquired skills / Competențe specifice acumulate

Professional skills / Competențe profesionale	**Cognitive:** Aquire the abilities of formalizing mathematical statements, understanding formal text, and constructing logical proofs. Train and learn how to prepare and deliver scientific talks, scientific papers, articles and textbooks, how to find and study relevant scientific material, how to efficiently participate at scientific events. **Technical:** Perform concrete formalizations of mathematical statements, understanding formal text, and constructing logical proofs. **Affective cognitive:** Understand the congnitive and technical skills above as necesary for a computer scientist.
Transversal skills / Competențe transversale	Identify situations in which techniques for scientific work can play a role in problem solving and apply it.

7. Objectives of the course / Obiectivele disciplinei (reieșind din grila competențelor specifice acumulate)

7.1. General objective / Obiectivul general al disciplinei	Aquire the abilities of formalizing mathematical statements, understanding formal text, and constructing logical proofs. Train and learn how to prepare and deliver scientific talks, scientific papers, articles and textbooks, how to find and study relevant scientific material, how to efficiently participate at scientific events.
7.2. Specfic objectives / Obiectivele specifice	**Knowledge:** Describe basic proof techniques, the main parts and characteristics of oral and written presentations. **Abilities:** Perform proofs, devise oral and written presentations of the (scientific) work. **Aptitudes:** Identify situations where techniques for scientific work can be employed.

8. Content / Conţinuturi*

8.1. Laboratory / Laborator	Teaching strategies / Metode de predare	Remarks, details / Observaţii
L1. Chapter 1. Proof Training. Basis of mathematical logic, syntax, semantics.	Experiment, discussion, team work, homewoks.	Examples at: https://www.risc.jku.at/people/tjebelea/ HomePage-TSW-Timisoara/
L2. Chapter 1. Proof Training. Proof methods in mathematical logic, the natural proof style.	Experiment, discussion, team work, homewoks.	Idem.
L3. Chapter 1. Proof Training. Proof situations, the main proof inference rules.	Experiment, discussion, team work, homewoks.	Idem.
L4. Chapter 1. Proof Training. Examples from propositional logic.	Experiment, discussion, team work, homewoks.	Idem.
L5. Chapter 1. Proof Training. Examples from predicate logic.	Experiment, discussion, team work, homewoks.	Idem.
L6. Chapter 1. Proof Training. Construction of a simple theory: defining equivalence relations and partitions.	Experiment, discussion, team work, homewoks.	Idem.
L7. Chapter 1. Proof Training. Equivalence relations and partitions: main properties.	Experiment, discussion, team work, homewoks.	Idem.
L8. Chapter 1. Proof Training. Algorithmic examples: sum, reverse, sorting.	Experiment, discussion, team work, homewoks.	Idem.
L9. Chapter 1. Proof Training. Unification: the logic and the algorithmic approach.	Experiment, discussion, team work, homewoks.	Idem.
L10. Chapter 2. Scientific Communication. Writing scientific papers: the main parts of an article.	Experiment, discussion, team work, homewoks.	Idem.
L11. Chapter 2. Scientific Communication. Writing scientific papers: structuring the contents.	Experiment, discussion, team work, homewoks.	Idem.
L12. Chapter 2. Scientific Communication. Preparation and delivery of a scientific presentation.	Experiment, discussion, team work, homewoks.	Idem.

L13. Chapter 2. Scientific Communication. Finding and studying the literature relevant for a specific topic.	Q&A/Lecture/Dialogue	Idem.
L14. Chapter 2. Scientific Communication. Efficient participation at conferences. Types of scientific cooperation.	Q&A/Lecture/Dialogue	Idem.

Recommended bibliography / Bibliografie
Bruno Buchberger – Thinking, Speaking, Writing. Lecture notes.

9. Correlations between the content of the course and the requirements of the IT field / Coroborarea conţinuturilor disciplinei cu aşteptările reprezentanţilor comunităţii epistemice, asociaţiilor profesionale şi angajatorilor reprezentativi din domeniul aferent programului

The content of the lecture is similar to similar standard lectures in well known and established universities.

10. Evaluation / Evaluare*

Activity / Tip de activitate	10.1. Evaluation criteria / Criterii de evaluare**	10.2. Evaluation methods / Metode de evaluare***	10.3. Weight in the averaged mark / Pondere din nota finală
10.4. Lecture / Curs			
10.5. Seminar/ lab	Homeworks: 10: excellent (outstanding performance with only minor errors), 8-9: very good (above the average standard but with some errors), 6-7: satisfactory (fair, but with significant shortcomings), 5: sufficient (performance meets minimum criteria), 0-4: fail (significant work has to be done).	Homework presentation at the whiteboard; Oral/written presentations graded individually	100%
10.6. Minimal knowledge for passing / Standard minim de performanţă Minimal (grade 5): general understanding of the material, ability to answer 51% of the material (as the sum of the laboratory tasks).			

Date/ Data completării   Signature (lecture) /   Signature (seminar)
                     Semnătura titularului de curs   Semnătura titularului de seminar
21.09.2021   Prof. Dr. Tudor Jebelean   Prof. Dr. Tudor Jebelean

                              Signature (director of the department)
                              Semnătura directorului de departament