National University of Engineering (UNI)
School of Computer Science
Syllabus 2026-I

1. COURSE

CS401. Research Methodology (Mandatory)

2. GENERAL INFORMATION

2.1 Course	:	CS401. Research Methodology
2.2 Semester	:	4th Semester
2.3 Credits	:	2
2.4 Horas	:	1 HT; 2 HP;
2.5 Duration of the period	:	16 weeks
2.6 Type of course	:	Mandatory
2.7 Learning modality	:	Face to face
2.8 Prerrequisites	:	CS100-CS2023. Introduction to Computer Science. (2nd Sem)

3. PROFESSORS

Meetings after coordination with the professor

4. INTRODUCTION TO THE COURSE

This course aims to teach students how to conduct scientific research in the field of computer science. The course instructors will determine a specific study area for each student and provide relevant bibliography for analysis. Based on this and additional bibliographic sources (researched by the student), the student should be able to construct a survey-type article on the assigned topic.

5. GOALS

- To teach students how to initiate scientific research in the field of computer science.

- To familiarize students with the main sources for obtaining relevant bibliography for research work in computer science: Researchindex, IEEE-CS[1], ACM[2].

- To enable students to analyze existing proposals on a specific topic and relate them coherently in a literature review.

- To enable students to write technical documents in computer science using LaTeX.

- To enable students to <u>reproduce</u> existing results in a specific topic through experimentation.

- The deliverables for this course are:

    Partial Progress: Mastery of the article topic and preliminary bibliography in LaTeXarticle format.

    Final: Understanding of the survey-type article, completed document containing, optionally, experimental results of the studied technique(s).

6. COMPETENCES

1) Analyze a complex computing problem and apply principles of computing and other relevant disciplines to identify solutions. (Usage)

AG-C08) Problem Analysis: Identifies, formulates, and analyzes complex computing problems. (Usage)

7) Develop computational technology for the well-being of all, contributing with human formation, scientific, technological and professional skills to solve social problems of our community. (Assessment)

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[1] http://www.computer.org
[2] http://www.acm.org

AG-C10) Investigation: Studies complex computing problems using information science methods. (Assessment)

3) Communicate effectively in a variety of professional contexts.. (Usage)

AG-C04) Communication: Communicates effectively in complex computing activities. (Usage)

4) Recognize professional responsabilities and make informed judgments in computing practice based on legal and ethical principles. (Usage)

AG-C02) Ethics: Applies ethical principles and commits to professional ethics and standards of computing practice. (Usage)

7. TOPICS

Unit 1: Scientific Initiation in Computer Science (48 hours)	
Competences Expected: 1,3,4,7,AG-C02,AG-C04,AG-C10	
Topics	Learning Outcomes
• Bibliographic search in computer science. • Writing technical articles in computer science.	• Learn how to conduct proper research in the field of computer science[Usar] • Know the appropriate bibliographic sources for this field[Usar] • Know how to write a document according to the characteristics required by conferences in this field[Usar]
Readings : [IEE08], [ACM08], [Cit08]	

8. WORKPLAN

8.1 Methodology

Individual and team participation is encouraged to present their ideas, motivating them with additional points in the different stages of the course evaluation.

8.2 Theory Sessions

The theory sessions are held in master classes with activities including active learning and roleplay to allow students to internalize the concepts.

8.3 Practical Sessions

The practical sessions are held in class where a series of exercises and/or practical concepts are developed through problem solving, problem solving, specific exercises and/or in application contexts.

9. EVALUATION SYSTEM

********* EVALUATION MISSING ********

10. BASIC BIBLIOGRAPHY

[ACM08]   ACM. *Digital Libray.* http://portal.acm.org/dl.cfm. Association for Computing Machinery, 2008.

[Cit08]   CiteSeer.IST. *Scientific Literature Digital Libray.* http://citeseer.ist.psu.edu. College of Information Sciences and Technology, Penn State University, 2008.

[IEE08]   IEEE-Computer Society. *Digital Libray.* http://www.computer.org/publications/dlib. IEEE-Computer Society, 2008.