National University of Engineering (UNI)
School of Artificial Intelligence
Syllabus 2027-I

1. COURSE

CS404. Research Workshop (Mandatory)

2. GENERAL INFORMATION

2.1 Course	:	CS404. Research Workshop
2.2 Semester	:	10th Semester.
2.3 Credits	:	4
2.4 Hours	:	2 HT; 4 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	:	CS403. Capstone Project II. (9th Sem)

3. PROFESSORS

Meetings after coordination with the professor

4. INTRODUCTION TO THE COURSE

This course aims to enable students to complete their thesis with sufficient quality for public defense, finishing experiments, final chapters, advisor revisions, and the formal institutional submission.

5. GOALS

- Complete the experimental part of the thesis with statistical rigor and full analysis of results.
- Write the final thesis chapters: conclusions, contributions, and future work.
- Ensure the document complies with the institutional format and has complete narrative coherence.
- Incorporate advisor revisions until obtaining an approved document ready for defense.
- Prepare and deliver the formal thesis presentation before the faculty committee.
- The deliverables for this course are:

  Midterm: Advanced draft with completed experiments, introduction, theoretical framework, proposal, and results chapters in LaTeX.

  Final: Complete thesis document approved by the advisor and ready for public defense.

6. COMPETENCES

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

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

AG-C05) Project Management: Applies management principles in computing to manage projects. (Assessment)

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

AG-C09) Design and Development of Solutions: Designs, implements, and evaluates solutions for complex computing problems. (Assessment)

7. TOPICS

Unit 1: Completion of Experiments and Results Analysis (12 hours)	
Competences Expected: AG-C05,AG-C08,AG-C09	
Topics	**Learning Outcomes**
• Full execution of the experimental protocol defined in the thesis plan. • Final statistical analysis: significance tests, confidence intervals, and effect size. • Objective comparison with baselines and state-of-the-art using established metrics. • Interpretation of results: findings, limitations, and threats to validity. • Reproducible documentation: code, datasets, configurations, and results.	• Complete the execution of the experimental protocol covering all defined cases. [Evaluar] • Analyze results with statistical rigor and interpret findings with respect to the hypothesis. [Evaluar] • Document experiments, configurations, and results in a reproducible manner. [Usar]
Readings : [**ieee**], [**acm**]	

Unit 2: Writing the Final Thesis Chapters (12 hours)	
Competences Expected: AG-C02,AG-C04,AG-C09	
Topics	**Learning Outcomes**
• Writing the results chapter: high-quality tables, figures, and comparative analysis. • Writing the conclusions chapter: findings, original contributions, and limitations. • Writing the future work chapter: extensions and open research problems. • Writing the final introduction: motivation, problem statement, and contributions summary. • Writing the executive abstract in both Spanish and English.	• Write the results chapter with clear visualizations and comparative analysis. [Evaluar] • Formulate the conclusions and original contributions of the thesis with precision. [Evaluar] • Write the abstract and final introduction articulating the problem and the contributions. [Evaluar]
Readings : [**ieee**], [**acm**]	

Unit 3: Document Formatting, Integration, and Quality (10 hours)	
Competences Expected: AG-C02,AG-C04,AG-C09	
Topics	**Learning Outcomes**
• Verification of compliance with the institutional thesis format in LaTeX. • Quality review of figures, tables, and equations in the final document. • Narrative and terminological consistency across all thesis chapters. • Review and update of bibliography: coverage, BibTeX format, and correct citations. • Generation of the final document: PDF, cover page, indices, and appendices.	• Verify that the document fully complies with the institutional thesis format. [Evaluar] • Correct the narrative and terminological consistency across all chapters. [Evaluar] • Produce the final PDF document with cover page, indices, and complete bibliography. [Usar]
Readings : [**ieee**], [**acm**]	

Unit 4: Advisor Review and Correction Cycles (10 hours)	
Competences Expected: AG-C02,AG-C08,AG-C09	
Topics	**Learning Outcomes**
• Structured revision dynamic: submission, review, and response to the advisor. • Incorporation of advisor feedback: prioritization and argued response. • Review of proposal soundness and experimental validity according to the advisor. • Handling academic disagreements with the advisor constructively and ethically. • Advisor approval criteria for authorizing the thesis defense.	• Systematically incorporate advisor observations with argued responses. [Evaluar] • Improve the scientific soundness of the document through revision cycles. [Evaluar] • Obtain formal advisor approval for the thesis defense authorization. [Evaluar]
Readings : [**ieee**], [**acm**]	

Unit 5: Defense Preparation and Rehearsal (8 hours)	
Competences Expected: AG-C02,AG-C04,AG-C05	
Topics	**Learning Outcomes**
• Design of the oral presentation: structure, narrative, and time management. • Preparation of technical slides: figures, results, and key comparisons. • Defense techniques for jury questions: argumentation and objection handling. • Defense rehearsal with the advisor and/or academic peers. • Stress management and effective communication in academic evaluation contexts.	• Design and deliver a clear and structured oral presentation of the thesis work. [Evaluar] • Defend methodology and results before critical questions from the jury. [Evaluar] • Demonstrate full command of the topic through prior defense rehearsals. [Usar]
Readings : [**ieee**], [**acm**]	

Unit 6: Formal Submission and Pre-Defense (8 hours)	
Competences Expected: AG-C02,AG-C04,AG-C05	
Topics	**Learning Outcomes**
• Institutional thesis submission process: documentation and regulatory deadlines. • Pre-defense before faculty authorities: evaluation of the final draft. • Incorporation of pre-defense committee corrections into the document. • Administrative procedures: jury designation and defense scheduling. • Ethics in dissemination: open access, institutional repository, and authorship rights.	• Submit the complete thesis document meeting all institutional requirements. [Evaluar] • Present the final draft before the pre-defense committee and incorporate their corrections. [Evaluar] • Complete the administrative procedures for scheduling the public defense. [Usar]
Readings : [**ieee**], [**acm**]	

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