



PROFESSIONAL RESIDENCY PROJECT COMPUTER SYSTEMS ENGINEERING DIVISION

Name: Professional Residency

Key: RPR-3100

Credits: 10

Course Nature: Obligatory

Semester: 9th

Contact Hours:

10 hours with the in-house advisor (4 monthly sessions for project review and follow-up)

500 student hours in supervised professional fieldwork over 4 months (1 credit = 50 hours of supervised professional fieldwork)

Instructor's or course coordinator's name

External project advisors: professionals assigned to companies or institutions to supervise the development of projects.

Internal project advisors (members of academia):

Full-time faculty:

- Dr. Juan Alberto Antonio Velázquez
- Dr. Leopoldo Gil Antonio
- Mtra. Erika López González
- Mtra. Adriana Reyes Nava
- Mtro. Juan Carlos Suárez Sánchez

Part-time faculty (according to time availability)

Bibliography

As it is a practical experience based on real problems, specific technical sources are used depending on the project (ISO standards, manufacturer's manuals, technical documentation, etc.).

Specific course information

Brief description of the content of the course (catalog description) :

The Professional Residency is a subject of the Computer Systems Engineering study program that constitutes the culminating experience of engineering design for the student. By developing a project in a company or



institution, the student must integrate the professional competencies acquired during their curriculum to propose, design, and validate a solution to a complex real-world problem. This subject allows you to move from the theoretical to the practical field, requiring the application of engineering design under realistic restrictions (technical, economic, social and global), in order to strengthen and apply your professional profile.

The Professional Residency project can be carried out individually, in groups or interdisciplinary; depending on the requirements, conditions and characteristics of the project of the company or institution.

Prerequisites

As it is a subject that is taken in the last semester, the Professional Residency requires that the student has consolidated the fundamental competencies of the graduate profile of a Computer Systems Engineer. Therefore, to be a candidate to take this subject, the student must have completed most of their training career, which is validated from:

- Have passed at least 85% of the total credits of the curriculum.
- Have accredited all the complementary activities.
- Have the Social Service released.
- Not have any subject in the condition of "special course".
- Be formally re-enrolled in the corresponding semester.

Specific goals for the course

Apply professional skills acquired in areas of knowledge of the graduate profile such as programming, databases, cybersecurity, networks and software development, through the design, implementation and validation of computational solutions to real complex problems of companies or institutions, while integrating communication skills, ethical judgment and collaborative work, documenting the impact of their solution and proposing improvements.

Course Learning Outcomes

SO1: The student identifies and formulates the problem to be solved in the company, applying engineering principles to develop a solution.

SO2: Design a solution considering real constraints (technological, security, economic, social, environmental).



SO3 Communicate results through technical reports and presentations to advisors.

SO4: Evaluates the impact of its solution in the organizational and social context, considering ethical principles.

SO5: Work as a team with advisors, company collaborators and other students.

SO6: Performs tests, collects data, and analyzes results to draw conclusions and validate your solution.

SO7: The student develops the ability to acquire and apply new knowledge by researching technologies, methodologies and regulations relevant to the real problem they face in their residency project.

Summary of the content to be addressed:

- **First monthly review:** identification and formulation of the problem to be solved in the company or institution, duly documented and validated by the advisors.
- **Second monthly review:** definition of the design and implementation methodology, considering the real constraints of the project (technological, safety, economic, social, environmental) duly documented and validated by the advisors.
- **Third monthly review:** development of the project and functional tests in the real environment that allow adjustments to be made if necessary, duly documented and validated by the advisors.
- **Fourth monthly review:** analysis of results, conclusions and recommendations duly documented and validated by the external advisor.

Course evaluation and validation

Each of the formal revisions, together with the attention to the corrections pointed out by the advisors, constitutes the formal evaluation of the course. To this end, the following will be used as evaluation instruments:

- FO-TESJo-64 partial evaluation of the Professional Residency advisors



– Rubrics for evaluation of student outcomes

At the end of the project development period, the external advisor, through the receiving company or institution, issues a letter of release from the student, in which the satisfactory fulfillment of the activities and objectives set is certified.

This letter is validated by the internal advisor, who confirms the information through direct communication with the company or institution. Based on this validation, the internal advisor registers the student's grades and depending on the impact and results of the project, the advisor can suggest a viable option for a degree under the Professional Residency modality, thus closing the evaluation cycle.