Quality Assurance and Reliability

Code: 102716
ECTS Credits: 6

2024/2025

Degree	Type	Year
2500895 Electronic Engineering for Telecommunication	OT	4
2500898 Telecommunication Systems Engineering	OT	4

Contact

Name: Jorge Francisco Suñé Tarruella

Email: jordi.sune@uab.cat

Teachers

Adria Galin Pons

Teaching groups languages

You can view this information at the end of this document.

Prerequisites

None is required for the students of the sudents of the degree

Objectives and Contextualisation

The objectives are that the student acquires the competences related to the management of the quality and the reliability, within the context of the optional matter of Quality and Production. The subject is specifically oriented towards the field of electronic engineering and telecommunication systems. The student must be able to design quality plans and specify and differentiate levels of quality in production processes. In addition, the student can analyze the reliability of systems, design reliability tests and contrast them with specifications of reliability through international standards.

Competences

Electronic Engineering for Telecommunication

- Apply basic elements of economics and human resource management, organisation and planning of projects.
- Apply the necessary legislation in the exercise of the telecommunications engineer's profession and use the compulsory specifications, regulations and standards
- Develop personal attitude.

- Develop personal work habits.
- Resolve problems with initiative and creativity. Make decisions. Communicate and transmit knowledge, skills and abilities, in awareness of the ethical and professional responsibilities involved in a telecommunications engineer's work.
- Work in a team.

Telecommunication Systems Engineering
- Apply basic elements of economics and human resource management, organisation and planning of projects.
- Apply the necessary legislation in the exercise of the telecommunications engineer's profession and use the compulsory specifications, regulations and standards.
- Develop personal attitude.
- Develop personal work habits.
- Resolve problems with initiative and creativity. Make decisions. Communicate and transmit knowledge, skills and abilities, in awareness of the ethical and professional responsibilities involved in a telecommunications engineer's work.
- Work in a team.

Learning Outcomes

1. Develop curiosity and creativity.
2. Generate innovative and competitive proposals in professional activity.
3. Identify and manage the aspects of ethical and professional responsibility in accordance with the planning of quality and reliability in electronic or telecommunications systems.
4. Identify those aspects that require decision-making process due among others to the flexibility with which they have been endowed current manufacturing systems.
5. Make one's own decisions.
6. Manage available time and resources.
7. Manage available time and resources. Work in an organised manner.
8. Manage, organise and plan standard procedures in specifications and reliability tests in the field of electronics and communications.
9. Manage, organize and plan standardized specifications and reliability testing procedures in the field of electronics and communications.
10. Prevent and solve problems.
11. Specify and apply standard procedures for quality control and design of acceptance plans.
12. Specifying and implementing the standard for quality control and design plans acceptance procedures.
13. Work cooperatively.
14. Work in complex or uncertain surroundings and with limited resources.

Content

Brief description of the contents:
• Quality management in the field of Electronics and Telecommunications
• Statistical process control.
• Design of quality acceptance plans.
• Reliability of simple and complex systems.
• Reliability test design.

Activities and Methodology

Title	Hours	ECTS	Learning Outcomes

Type: Directed			
Exercises	11	0.44	1, 2, 3, 5, 7, 8, 10, 11, 13, 14
Practical sessions	9	0.36	1, 2, 3, 5, 7, 8, 10, 11, 13, 14
Theoretical classes and follow-up in the classroom	22	0.88	3, 7, 8, 11
Type: Supervised			
Tutorials	12	0.48	1, 2, 3, 5, 7, 8, 10, 11, 13, 14
Type: Autonomous			
Study, problem solving and reporting	84	3.36	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14

Classroom teaching along with work to be performed by the student, classroom work and practical sessions. The virtual campus and electronic repositories will be used as tools for communication and documentary support.

Annotation: Within the schedule set by the centre or degree programme, 15 minutes of one class will be reserved for students to evaluate their lecturers and their courses or modules through questionnaires.

Assessment

Continous Assessment Activities

Title	Weighting	Hours	ECTS	Learning Outcomes
1st partial exam	35%	2	0.08	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 14
2nd partial exam	35%	2	0.08	2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 14
Realization and reports of the practical sessions	30%	4	0.16	1, 2, 3, 5, 7, 8, 10, 11, 13, 14
Recovery exam	70%	4	0.16	1, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 14

a) Scheduled evaluation process and activities

The evaluation of the acquisition of competences by students is done with continuous evaluation, according to these criteria:
A. First partial exam, half of the semester aprox. (35%)
B. Second partial exam, towards the end of the semester. (35%)
C. Realization and reports of the practical sessions. (30%).

To pass the course through continuous evaluation, a minimum of 3,5/10 punts en les activitats A i B and global mark of 5/10 punts are required. Activity C is not recoverable.

Delivery of the solution of optional homoework exercises might count up to 10% of the global mark , reducing the weight of activities A i B, which would account for 30% of the global mark each of them.

For academic needs, and according to the development of the course, the evaluation procedures may be adjusted by the professor.

b) Programming evaluation activities
The programming of evaluation activities A and B will be made public through the Virtual Campus.

c) Recovery process
The student can applu for the recovery exam in any case. Activity C is not recoverable.

d) Procedure for review of qualifications
For activitiesA and B a place, date and time of review will be indicated. Claims may be made on the activity grade, which will be evaluated by the faculty responsible for the subject. If the student does not show up in this programmed review session, no possibility of review will be allowed.

e) Qualifications
The regulations of the UAB indicate that MH can onlybe granted to students who have obtained a final grade equal to or greater than 9.00. You can grant up to 5% of MH of the total number of students enrolled.
Not Evaluable: A student will be considered not evaluable (NA) if he has not presented in a set of activities theweight of which equals a minimum of two thirds of the total grade of the subject.
Final mark for the evaluable students. To pass it is necessary that the evaluation of each of the parties exceeds the minimum grade required and that the total evaluation, taking into account the weights of each activity, have a grade equal to or greater than 5. In case of not passing the subject, the numerical note of the file will be the lowest value between 4.5 and the weighted average of the notes.

f) Irregularities by the student, copy and plagiarism
Without prejudice to other disciplinary measures deemed appropriate, the irregularities committed by the student that may lead to a variation of the grade of an evaluation act will be scored with a zero. Therefore, copying, plagiarism, cheating, letting copy, etc. in any of the evaluation activities will involve suspending with a zero. The evaluation activities qualified in this way and by this procedure will not be recoverable. If it is necessary to pass any of these evaluation activities to pass the subject, this subject will be suspended directly, without the opportunity to recover it in the same course. The final grade will be that which results from thecorresponding weights of each part, but at most a final grade of the subject of 3 points.

h) Evaluation of repeating students
From the second enrollment, the evaluation of the subject will consist of a synthesis test, plus the mark corresponding activity C (with the corresponding weight) obtained the first time the student has enrolled in the subject will be considered. To be eligible for this differentiated evaluation, the repeating student must ask the teacher by email no later than 4 weeks after the beginning of the classes.

The proposed teaching and evaluation methodologies may be subjected to modification, depending on possible restrictions imposed by the health authorities on face-to-face attendance.

Bibliography

The Assurance sciences : an introduction to quality control and reliability / Siegmund Halpern	Halpern, Siegmund
Handbook of reliability engineering / Hoang Pham (editor)	--
Handbook of reliability engineering [Recurs electrònic] / Hoang Pham (editor)	--
Infraestructuras comunes de telecomunicaciones para el acceso a los servicios de telecomunicación en el interior de las edificaciones [Recurs electrònic] : Normas UNE y legislación / AENOR	Asociación Española de Normalización y Certificación

Introduction to statistical quality control / Douglas C. Montgomery	Montgomery, Douglas C.
Operations and supply chain management / Roberta S. Russell, Bernard W. Taylor III	Russell, Roberta, autor
Principles of quality control / Jerry Banks	Banks, Jerry G.
Quality engineering handbook / Thomas Pyzdek ; edited by Paul A. Keller	Pyzdek, Thomas
Reliability, quality, and safety for engineers / B. S. Dhillon	Dhillon, B. S.
Statistical process control [Recurs electrònic] / John S. Oakland	Oakland, John S.
UNE-ISO 2859-1 : procedimientos de muestreo para la inspección por atributos / Asociación Española de Normalización y Certificación (AENOR)	--

Software

Matlab and advanced MS Excel

Language list

Name	Group	Language	Semester	Turn
(PAUL) Classroom practices	331	Catalan/Spanish	second semester	morning-mixed
(PLAB) Practical laboratories	331	Catalan/Spanish	second semester	morning-mixed
(TE) Theory	330	Catalan/Spanish	second semester	morning-mixed