Universitat Autònoma de Barcelona

2021/2022

Mathematics

Code: 106040
ECTS Credits: 9

Degree	Type	Year	Semester
2500897 Chemical Engineering	FB	1	A

The proposed teaching and assessment methodology that appear in the guide may be subject to changes as a result of the restrictions to face-to-face class attendance imposed by the health authorities.

Contact

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Use of Languages

Principal working language: catalan (cat)
Some groups entirely in English: No
Some groups entirely in Catalan: Yes
Some groups entirely in Spanish: No

Prerequisites

None.

A good knowledge of the Maths. learned at de secondary school is assumed.

Objectives and Contextualisation

1. Achieve a fluent use the skills of Calculus and Linear Àlgebra.

2. Reach a useful theoretical level of Calculus and Algebra issues as well as their more immediate geometrical implicacions.

3. Know how to apply methodes of calculculus to solving problems in Science and Technology..

Competences

- Apply relevant knowledge of the basic sciences, such as mathematics, chemistry, physics and biology, and the principles of economics, biochemistry, statistics and material science, to comprehend, describe and resolve typical chemical engineering problems.
- Demonstrate basic knowledge of the use and programming of computers, and apply the applicable IT resources to chemical engineering.
- Develop personal work habits.
- Develop thinking habits.
- Students must be capable of applying their knowledge to their work or vocation in a professional way and they should have building arguments and problem resolution skills within their area of study.
- Students must have and understand knowledge of an area of study built on the basis of general secondary education, and while it relies on some advanced textbooks it also includes some aspects coming from the forefront of its field of study.
- Work in a team.

Learning Outcomes

1. Apply the basic concepts of algebra to problem solving.
2. Develop critical thinking and reasoning
3. Develop scientific thinking.
4. Identify, describe and apply basic mathematical and statistical concepts.
5. Make ones own decisions.
6. Students must have and understand knowledge of an area of study built on the basis of general secondary education, and while it relies on some advanced textbooks it also includes some aspects coming from the forefront of its field of study.
7. Use specific software to resolve mathematical or statistical problems in engineering.
8. Work cooperatively.

Content

1-Real numbers.

2- Fumctions dof one real variable. Graphs. limits and continuïty.

3-Polinomic equations. The complex numbers.

4- Derivatives and their properties. Optimitzation. Taylor's formula. Aplications.

5- Integration.Primitives. Basic differential relations (Equations). Parametric integrals. Aplications.

6- The space R^n. Linear transformacions and symmetries. Matrices. Determinants. Systemes of linear equations. Aplications.

7-Vector spaces. The euclidean space R^n.

8- Diagonalitzation of matrices. Aplications.

Methodology

See the CATALN version.

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.

Activities

Title	Hours	ECTS	Learning Outcomes
Type: Directed			
Problems session	23	0.92	3, 2, 5, 6
Theoretical sessions	45	1.8	3, 2, 4, 6
Type: Supervised			
Seminars	8	0.32	1, 4, 5, 8
Type: Autonomous			
Preparation of the evaluations	27	1.08	3, 2, 5, 8
Solving the proposed problems	45	1.8	1, 3, 2, 4

Study of theoretical concepts	59	2.36	1, 3, 2, 4

Assessment

You get your current qualification from fórmula: Q=0,05·(S1+S2+S3+S4)+ 0,40·(P1+P2).

If Q is bigger or equal than 5, you succeeded. Otherwise, you have the possibility of a second try consisting in a global exam where you will obtain a qualification R. The final qualification is given by the formula Q'=0,05 (S1+S2+S3+S4)+ max{0,40·(P1+P2), 0,8 R}.

For more information conference the CATALAN version.

Assessment Activities

Title	Weighting	Hours	ECTS	Learning Outcomes
Parcial Exam P1	40%	3	0.12	2, 4, 5, 6
Partial Exam P2	40%	3	0.12	3, 4, 5, 6
Seminar 1	0,5% (I don't know in pounds)	3	0.12	2, 4, 6, 8
Seminar 2	0,5%	3	0.12	4, 5, 6, 7
Seminar4	0,5%	3	0.12	1, 2, 4, 5, 6
Seminari 3	0,5%	3	0.12	1, 2, 4, 6, 8

Bibliography

See the CATALAN version

Software

No software used.