Course guide
330160 - AAQ - Further Chemical Analysis

Last modified: 04/05/2023

Unit in charge: Manresa School of Engineering
Teaching unit: 750 - EMIT - Department of Mining, Industrial and ICT Engineering.

Degree: BACHELOR'S DEGREE IN CHEMICAL ENGINEERING (Syllabus 2009). (Optional subject).

Academic year: 2023 **ECTS Credits:** 6.0 **Languages:** Catalan, English

LECTURER

Coordinating lecturer: CONCEPCION LAO LUQUE

Others: M. MONTSERRAT SOLE SARDANS

DEGREE COMPETENCES TO WHICH THE SUBJECT CONTRIBUTES

Specific:
1. (ENG) Ampliar coneixements de les principals tècniques d'anàlisi instrumental i les seves aplicacions pràctiques a través de la resolució de problemes, excercicis i pràctiques de laboratori.
2. (ENG) Desenvolupar habilitats en laboratori d'anàlisi instrumental ser capaç d'obtenir dades analítiques fiables.
3. Ability to understand and apply the principles of basic knowledge of chemical analysis and its applications to the analysis of matter.

Transversal:
4. EFFICIENT ORAL AND WRITTEN COMMUNICATION - Level 3. Communicating clearly and efficiently in oral and written presentations. Adapting to audiences and communication aims by using suitable strategies and means.
5. TEAMWORK - Level 3. Managing and making work groups effective. Resolving possible conflicts, valuing working with others, assessing the effectiveness of a team and presenting the final results.
6. SELF-DIRECTED LEARNING - Level 3. Applying the knowledge gained in completing a task according to its relevance and importance. Deciding how to carry out a task, the amount of time to be devoted to it and the most suitable information sources.

TEACHING METHODOLOGY

LEARNING OBJECTIVES OF THE SUBJECT

STUDY LOAD

Type	Hours	Percentage
Hours small group	15,0	10.00
Hours large group	45,0	30.00
Self study	90,0	60.00

Total learning time: 150 h

CONTENTS

(ENG) Contingut 1: Introducció. Tractament de la mostra. Calibratge. Estudis de la fiabilitat de mètodes analítics instrumentals

Full-or-part-time: 33h
Theory classes: 12h
Self study : 21h

(ENG) Contingut 2: Mètodes òptics d'anàlisi

Full-or-part-time: 57h 30m
Theory classes: 15h
Laboratory classes: 8h
Self study : 34h 30m

(ENG) Contingut 3: Mètodes cromatogràfics i Espectrometria de masses

Full-or-part-time: 42h 30m
Theory classes: 15h
Laboratory classes: 2h
Self study : 25h 30m

(ENG) Contingut 4: Mètodes Electroquímics

Full-or-part-time: 20h
Theory classes: 6h
Laboratory classes: 2h
Self study : 12h

ACTIVITIES

(ENG) TÍTOL DE L'ACTIVITAT 1: PRACTIQUES DE LABORATORI

Full-or-part-time: 30h
Laboratory classes: 12h
Self study: 18h

(ENG) TÍTOL DE L'ACTIVITAT 2: RESOLUCIÓ DE PROBLEMES I/O EXERCICIS. AVALUACIÓ CONTINUADA

Full-or-part-time: 22h
Theory classes: 2h
Self study: 20h

(ENG) ACTIVITAT 3: PROVES INDIVIDUALS D'AVALUACIÓ

Full-or-part-time: 51h
Theory classes: 6h
Self study: 45h

GRADING SYSTEM

BIBLIOGRAPHY

Basic:
- Skoog, Douglas A. ; Holler, F. James ; Crouch, Stanley R. Principles of instrumental analysis. 6th. Belmont: Ed Brooks/Cole. Belmont, 2007. ISBN 9780495125709.
- Skoog, Douglas A.; West, Donald M.; Holler, F. James. Fundamentos de química analítica [on line]. 4a ed. Barcelona: Reverté, 1996-1997 [Consultation: 10/06/2022]. Available on: https://search-ebscohost-com.recursos.biblioteca.upc.edu/login.aspx?direct=true&AuthType=ip,uid&db=nlebk&AN=2931516&site=ehost-live&ebv=EB&ppid=pp_Cover. ISBN 8429175563.
- Harris, Daniel C. Análisis químico cuantitativo [on line]. 3ª Ed. Barcelona: Editorial Reverté, S.A, 2006 [Consultation: 08/06/2022]. Available on: https://www-ingebook-com.recursos.biblioteca.upc.edu/ib/NPcd/IB_BooksVis?cod_primaria=1000187&codigo_libro=7708. ISBN 8429172246.
- Christian, Gary D. Química analítica [on line]. 6ª Edició. Limusa: México, 2009 [Consultation: 03/06/2022]. Available on: https://www-ingebook-com.recursos.biblioteca.upc.edu/ib/NPcd/IB_BooksVis?cod_primaria=1000187&codigo_libro=4367. ISBN 9789701072349.
- Rubinson, Kenneth A.; Rubinson, Judith F. Análisis instrumental. Madrid: Prentice Hall, 2001. ISBN 9788420529882.
- Skoog, Douglas A; Holler, F. James; Crouch, Stanley R. Principios de análisis instrumental. Séptima edición. México: Cengage Learning, 2018. ISBN 9786075266558.

Complementary:
- Hamilton, Leicester Forsyth ; Simpson, Stephen G. ; Ellis, David W. Calculations of analytical chemistry. 7th. New York: McGraw Hill, 1969.
- Bermejo Martínez, Francisco. Química analítica general, cuantitativa e instrumental Vol. II. Madrid: Paraninfo, 1991. ISBN 8428318107.
- Harvey, David. Química Analítica Moderna. Madrid: McGraw Hill, 2002. ISBN 9788448136352.