

Course guide

330605 - MNAEM - Numerical Methods for Mining Engineering

Last modified: 21/04/2026

Unit in charge: Manresa School of Engineering
Teaching unit: 749 - MAT - Department of Mathematics.
Degree: MASTER'S DEGREE IN MINING ENGINEERING (Syllabus 2013). (Compulsory subject).
Academic year: 2026 **ECTS Credits:** 5.0 **Languages:** Catalan, Spanish

LECTURER

Coordinating lecturer: Cors Iglesias, Josep M.

Others:

DEGREE COMPETENCES TO WHICH THE SUBJECT CONTRIBUTES

Specific:

1. (ENG) Capacitat per a abordar i resoldre problemes matemàtics avançats d'enginyeria, des del plantejament del problema fins al desenvolupament de la formulació i la seva implementació en un programa d'ordinador. En particular, capacitat per a formular, programar i aplicar models analítics i numèrics avançats de càlcul, projecte, planificació i gestió, així com capacitat per a la interpretació dels resultats obtinguts, en el context de l'Enginyeria de Mines.

TEACHING METHODOLOGY

LEARNING OBJECTIVES OF THE SUBJECT

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STUDY LOAD

Type	Hours	Percentage
Self study	80,0	64.00
Hours large group	45,0	36.00

Total learning time: 125 h

CONTENTS

title english

Description:

content english

Full-or-part-time: 19h

Theory classes: 3h

Laboratory classes: 6h

Self study : 10h



title english

Description:

content english

Full-or-part-time: 53h

Theory classes: 6h

Laboratory classes: 12h

Self study : 35h

title english

Description:

content english

Full-or-part-time: 53h

Theory classes: 6h

Laboratory classes: 12h

Self study : 35h

ACTIVITIES

name english

Full-or-part-time: 5h

Laboratory classes: 1h

Self study: 4h

name english

Full-or-part-time: 10h

Laboratory classes: 2h

Self study: 8h

name english

Full-or-part-time: 10h

Laboratory classes: 2h

Self study: 8h

name english

Full-or-part-time: 20h

Theory classes: 4h

Self study: 16h

GRADING SYSTEM

Any academic fraud, plagiarism or use or possession of unauthorised means in an assessment activity leads to a mark of zero (0) for the affected test or assignment. Furthermore, in accordance with the University's regulations, if disciplinary proceedings are initiated the subject is recorded as "Pending Assessment" until a decision is reached. These incidents are managed in accordance with the [Action Framework for Academic Integrity in Assessment at the UPC](#).

BIBLIOGRAPHY

Basic:

- Chapra, S. C.; Canale, R. P. Métodos numéricos para ingenieros [on line]. 5ª ed. México: McGraw-Hill, 2007 [Consultation: 08/06/2022]. Available on: https://www-ingebook-com.recursos.biblioteca.upc.edu/ib/NPcd/IB_BooksVis?cod_primaria=1000187&codigo_libro=8100. ISBN 9789701061145.
- Aubanell, A.; Benseny, A.; Delshams, A. Eines bàsiques de càlcul numèric: amb 87 problemes resolts [on line]. Barcelona: Universitat Autònoma de Barcelona, 1991 [Consultation: 07/10/2025]. Available on: <https://web.mat.upc.edu/amadeu.delshams/articles/EBCN.pdf>. ISBN 8479292318.
- Strikwerda, J. C. Finite difference schemes and partial differential equations. 2nd ed. Philadelphia: Society for Industrial and Applied Mathematics, 2004. ISBN 0898715679.
- Masdemont, J. Curs d'elements finits amb aplicacions [on line]. Barcelona: Edicions UPC, 2002 [Consultation: 19/11/2020]. Available on: <http://hdl.handle.net/2099.3/36166>. ISBN 8483015951.

Complementary:

- Burden, R. L.; Faires, J. D. Análisis numérico. 6ª ed. México: International Thompson, 1998. ISBN 9687529466.