Course guide
220309 - 220309 - Air Transport and Navigation Systems

Last modified: 02/04/2024

Unit in charge: Terrassa School of Industrial, Aerospace and Audiovisual Engineering
Teaching unit: 220 - ETSEIAT - Terrassa School of Industrial and Aeronautical Engineering.

Degree: MASTER'S DEGREE IN AERONAUTICAL ENGINEERING (Syllabus 2014). (Compulsory subject).

Academic year: 2024 **ECTS Credits:** 7.5 **Languages:** Catalan

LECTURER

Coordinating lecturer: ORIOL LORDAN GONZALEZ (quadrimestre de tardor)
ANTONI BARLABÉ DALMAU (quadrimestre de primavera)

Others: Sala Matavera, Jordi
Sallán Leyes, José María

DEGREE COMPETENCES TO WHICH THE SUBJECT CONTRIBUTES

Specific:
CE20. MUEA/MASE: An aptitude for defining and designing navigation and management systems for air traffic and designing airspace, manoeuvres and aeronautical easements.
CE22. MUEA/MASE: Sufficient knowledge of wave propagation and problems involving ground station links.
CE23. MUEA/MASE: The ability to design radar systems and air navigation aids.
CE24. MUEA/MASE: Sufficient knowledge of aeronautical information and communication technologies.
CE25. MUEA/MASE: Sufficient knowledge of the regulations pertaining to air navigation and traffic and the capacity to certify air navigation systems.
CG06-MUEA. (ENG) Capacitat per a l'anàlisi i la resolució de problemes aeroespacials en entorns nous o desconeguts, dins de contextos amplis i complexos.
CG07-MUEA. (ENG) Competència per a planificar, projectar, gestionar i certificar els procediments, infraestructures i sistemes que suporten l'activitat aeroespacial, incloent els sistemes de navegació aèria.
CE28. MUEA/MASE: Sufficient knowledge of air transport operations.
CG08-MUEA. (ENG) Competència per al projecte de construccions i instal·lacions aeronàutiques i espacials, que requereixin un projecte integrat de conjunt, per la diversitat de les seves tecnologies, la seva complexitat o pels amplis coneixements tècnics necessaris.
CE29. MUEA/MASE: Understanding and mastery of how aeronautics is organised nationally and internationally and how the global transport system, particularly the air transport system, functions.
CG09-MUEA. (ENG) Competència en totes aquelles àrees relacionades amb les tecnologies aeroportuàries, aeronàutiques o espacials que, per la seva naturalesa, no siguin exclusives d'altres branques de l'enginyeria.
CG05-MUEA. (ENG) Capacitat per analitzar i corregir l'impacte ambiental i social de les solucions tècniques de qualsevol sistema aeroespacial.
CG10-MUEA. (ENG) Coneixement, comprensió i capacitat per aplicar la legislació necessària en l'exercici de la professió d'Enginyer Aeronàutic.

Transversal:
CT2. SUSTAINABILITY AND SOCIAL COMMITMENT: Being aware of and understanding the complexity of the economic and social phenomena typical of a welfare society, and being able to relate social welfare to globalisation and sustainability and to use technique, technology, economics and sustainability in a balanced and compatible manner.

Basic:
CB06. Manage original concepts in research projects.
CB07. Student capacity to use their knowledge in new and multidisciplinary situations.
CB08. Generate decision from incomplete information assuming its social and ethical responsibilities.
CB10. Improve self-learning capacity

TEACHING METHODOLOGY

LEARNING OBJECTIVES OF THE SUBJECT

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STUDY LOAD

Type	Hours	Percentage
Self study	120,0	64.00
Hours small group	22,5	12.00
Hours large group	45,0	24.00

Total learning time: 187.5 h

CONTENTS

title english

Description:
content english

Full-or-part-time: 75h
Theory classes: 27h
Self study : 48h

title english

Description:
content english

Full-or-part-time: 37h 30m
Theory classes: 6h
Laboratory classes: 7h 30m
Self study : 24h

title english

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content english

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content english

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Theory classes: 6h
Laboratory classes: 7h 30m
Self study : 24h

GRADING SYSTEM

BIBLIOGRAPHY

Basic:
- Barnhart, C.; Smith, Barry C. Quantitative problem solving methods in the airline industry: a modeling methodology handbook [on line]. New York [etc.]: Springer, cop. 2012 [Consultation: 01/06/2023]. Available on: https://ebookcentral-proquest-com.recursos.biblioteca.upc.edu/lib/upcatalunya-ebooks/detail.action?docID=884293. ISBN 9781461416074.
- Helfrick, A. Principles of avionics. 9th ed. Leesburg, VA: Avionics Communications Inc, 2015. ISBN 9781885544353.

Complementary:
- Pindado Carrión, S. Elementos de transporte aéreo. Madrid: Escuela Técnica Superior de Ingenieros Náuticos, DL 2006. ISBN 9788492111398.
- Cardama Aznar, Á. [et al.]. Antenas [on line]. 2a ed. Barcelona: Edicions UPC, 2002 [Consultation: 05/07/2016]. Available on: http://hdl.handle.net/2099.3/36797. ISBN 8483016257.
- Forssell, Börje. Radionavigation systems. Boston; London: Artech House, cop. 2008. ISBN 9781596933545.
- Volakis, J. L.; Johnson, R. C.; Jasik, H. Antenna engineering handbook. 4th ed. New York [etc.]: McGraw-Hill, cop. 2007. ISBN 9780071475747.
- Zogg, Jean-Marie. GPS essentials of satellite navigation compendium [on line]. U-blox, 2009 [Consultation: 12/04/2022]. Available on: https://www.u-blox.com/sites/default/files/products/documents/GPS-Compendium_Book_%28GPS-X-02007%29.pdf. ISBN 9783033021396.
- Kaplan, E.D.; Hegarty, C.J. Understanding GPS/GNSS: principles and applications. 3rd ed. Boston: Artech House, 2017. ISBN 9781630810580.
- Kayton, M.; Fried, W.R. Avionics navigation systems [on line]. 2nd ed. New York: John Wiley and Sons, 1997 [Consultation: 03/05/2022]. Available on: https://onlinelibrary-wiley-com.recursos.biblioteca.upc.edu/doi/book/10.1002/9780470172704. ISBN 9780471547952.
- Barlabé i Dalmau, Antoni; Muñoz Porcar, Constantino. La Carta de Smith: aplicacions. Barcelona: Edicions UPC, 2001. ISBN 8483015056.