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| Program | 09TT- Engineering in Telecommunication Technologies and Services |
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| Course number and name | |
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| Number | 95000030 |
| Name | Transmission systems Sistemas de transmision |
| Semester | Y3-S5 |

| Credits and contact hours | |
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| ECTS Credits | 4.5 |
| Contact hours | 45 |

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| Coordinator's name | Fernando Jaureguizar Núñez |
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| Specific course information | | |
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| Description of course content | | |
| Basic education of the student in transmission media, including the characterization of the signals, the analysis of the adequate transmission techniques, and the study of complete systems. | | |
| List of topics to be covered | | |
| 1. Introduction to transmission systems, 2. Characterization of digital sources, 3. Transmission media, 4. Signal degradation, 5. Digital transmission systems. | | |
| Prerequisites or co-requisites | | |
| It will be assumed that students have knowledge on communication theory, signals and systems, fields and waves in telecommunication. | | |
| Course category in the program | | |
| <input checked="" type="checkbox"/> R (required) | <input type="checkbox"/> E (elective) | <input type="checkbox"/> SE (selective elective) |

| Specific goals for the course | |
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| Specific outcomes of instruction | |
| RA1: Characterization of the elements of a transmission system. | |
| RA2: Knowledge and characterization of the sources of information and digitization of analog signals. | |
| RA3: Basic training on transmission media: metallic lines, optical fiber and radio transmission, which includes the characterization of the signals used therein. | |
| RA4: Methodology for the analysis of the techniques and transmission media suitable for transmitting signals, and the specification of their fundamental parameters. | |

RA5: Knowledge and characterization of degradations that affect the transmission of signals.
 RA6: Knowledge of complete transmission systems.
 RA7: Acquisition of a structured view of problems related to the transmission that serves as a framework for integrating knowledge related to telecommunications.
 RA8: Handling of recommendations and standards, and large volume of data, graphs and expressions required to solve real problems.

Student outcomes addressed by the course

CG-2, CG-3, CG-4, CG-9, CG-12
 CECT1, CECT4, CECT5, CECT6, CECT8, CECT15

Bibliography and supplemental materials

- Course notes (slides)
- R. L. Freeman, Telecommunications Transmission Handbook (4th edition), Wiley Interscience, 1998.
- A. Huurdeman, Guide to Telecommunications Transmission Systems, Artech House, 1997.
- D. Minoli, Telecommunications Technology Handbook (2nd edition), Artech House, 2003.
- R. E. Matick, Transmission Lines for Digital and Communication Networks, Wiley-IEEE Press, 2000.
- J. M. Hernando Rábanos, Transmisión por radio (6a edición), Ramón Areces, 2008.
- J. M. Senior, Optical Fiber Communications: Principles and Practice (3rd edition), Prentice-Hall, 2009.

Teaching methodology

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| <u> X </u> lectures | <u> X </u> problem solving sessions | <u> </u> collaborative actions | <u> </u> laboratory sessions |
| Other: | | | |