# Universitatea Naţională de Ştiinţă şi Tehnologie Politehnica Bucureşti
## Facultatea de Electronică, Telecomunicaţii şi Tehnologia Informaţiei

## COURSE DESCRIPTION

### 1. Program identification information

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| 1.1 Higher education institution | **National University of Science and Technology Politehnica Bucharest** |
| 1.2 Faculty | **Electronics, Telecommunications and Information Technology** |
| 1.3 Department | **Telecommunications** |
| 1.4 Domain of studies | Electronic Engineering, Telecommunications and Information Technology |
| 1.5 Cycle of studies | Bachelor/Undergraduate |
| 1.6 Programme of studies | Technologies and Telecommunications Systems |

### 2. Date despre disciplină

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|---|---|---|---|---|---|---|---|
| 2.1 Course name (ro) (en) | | | | Tehnici si sisteme de transmisiuni multiplex Multiplex Transmission Techniques and Systems | | | |
| 2.2 Course Lecturer | | | | Conf. Dr. Alexandru RUSU, Conf. Dr. Madalina Berceanu | | | |
| 2.3 Instructor for practical activities | | | | Conf. Dr. Alexandru RUSU, Conf. Dr. Madalina Berceanu | | | |
| 2.4 Year of studies | 4 | 2.5 Semester | II | 2.6. Evaluation type | V | 2.7 Course regime | Op |
| 2.8 Course type | S | 2.9 Course code | 04.S.08.A.210 | | | 2.10 Tipul de notare | Nota |

### 3. Total estimated time (hours per semester for academic activities)

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|---|---|---|---|---|---|---|
| 3.1 Number of hours per week | 3.5 | Out of which: 3.2 course | 2.00 | 3.3 seminary/laboratory | | 1.5 |
| 3.4 Total hours in the curricula | 49.00 | Out of which: 3.5 course | 28 | 3.6 seminary/laboratory | | 21 |

| Distribution of time: | hours |
|---|---|
| Study according to the manual, course support, bibliography and hand notes Supplemental documentation (library, electronic access resources, in the field, etc) Preparation for practical activities, homework, essays, portfolios, etc. | 41 |
| Tutoring | 4 |
| Examinations | 4 |
| Other activities (if any): | 0 |

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| 3.7 Total hours of individual study | 76.00 |
| 3.8 Total hours per semester | 125 |
| 3.9 Number of ECTS credit points | 5 |

### 4. Prerequisites (if applicable) (where applicable)

| 4.1 Curriculum | |
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| 4.2 Results of learning | |
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**5. Necessary conditions for the optimal development of teaching activities** (where applicable)

| 5.1 Course | |
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| 5.2 Seminary/ Laboratory/Project | |

**6. General objective** *(Reffering to the teachers' intentions for students and to what the students will be thought during the course. It offers an idea on the position of course in the scientific domain, as well as the role it has for the study programme. The course topics, the justification of including the course in the currcula of the study programme, etc. will be described in a general manner)*

**7. Competences** *(Proven capacity to use knowledge, aptitudes and personal, social and/or methodological abilities in work or study situations and for personal and proffesional growth. They refflect the empolyers requirements.)*

| **Specific Competences** | |
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| **Transversal (General) Competences** | |

**8. Learning outcomes** *(Synthetic descriptions for what a student will be capable of doing or showing at the completion of a course. The learning outcomes reflect the student's acomplishments and to a lesser extent the teachers' intentions. The learning outcomes inform the students of what is expected from them with respect to performance and to obtain the desired grades and ECTS points. They are defined in concise terms, using verbs similar to the examples below and indicate what will be required for evaluation. The learning outcomes will be formulated so that the correlation with the competences defined in section 7 is highlighted.)*

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| **Knowledge** | *The result of knowledge aquisition through learning. The knowledge represents the totality of facts, priciples, theories and practices for a given work or study field. They can be theoretical and/or factual.* |
| **Skills** | *The capacity to apply the knowledge and use the know-how for completing tasks and solving problems. The skills are described as being cognitive (requiring the use of logical, intuitive and creative thinking) or practical (implying manual dexterity and the use of methods, materials, tools and intrumentation).* |
| **Responsability and autonomy** | *The student's capacity to autonomously and responsably apply their knowledge and skills.* |

**9. Teaching techniques** *(Student centric techniques will be considered. The means for students to participate in defining their own study path, the identification of eventual fallbacks and the remedial measures that will be adopted in those cases will be described.)*

The didactic materials used are the course notes and presentations, also available in electronic format.

Starting from the analysis of the students' learning characteristics and their specific needs, the teaching process will explore both expository (lecture, exposition), problem-solving and conversational-interactive teaching methods, based on action-based learning models, such as exercise, practical activities and problem solving. Interactivity with students through the associated applied activities. Intervals are reserved for presentation, analysis and solving of some practical problems (reality modeling).

Lectures will be used in the teaching activity, based on Power Point presentations, which will be presented in front of the students as far as is technically possible, or/and through a videoconferencing environment such as Teams. These will be made available to students. Each course will start with a short recap of the previous lesson to ensure continuity of the concepts covered.

The presentations use, as far as possible, examples of real-life application of the concepts taught, so that the information presented is easy to understand and assimilate.

In the applied section, teaching is based on the use of the expository method (covering the communication and demonstrative function). The dialogue during the course is also extended during the application sessions. These are necessary to prepare students for homework and verification tests along the way.

Feedback will also be used, as a way of adapting the pedagogical approach to the students' learning needs.

## 10. Contents

| Bibliography: |
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## 11. Evaluation

| Activity type | 11.1 Evaluation criteria | 11.2 Evaluation methods | 11.3 Percentage of final grade |
|---|---|---|---|
| 11.4 Course |  |  |  |
| 11.5 Seminary/laboratory/project |  |  |  |
| 11.6 Passing conditions | | | |
| Obtaining 50% of the total score or the minimum score provided by the regulation. | | | |

**12. Corroborate the content of the course with the expectations of representatives of employers and representative professional associations in the field of the program, as well as with the current state of knowledge in the scientific field approached and practices in higher education institutions in the European Higher Education Area (EHEA)**

The telecommunications have become an important factor in our modern society development. In this context the information broadcasting at important distances is one of the most important elements of any telecommunication system.

For this reason, at the present time, the industry requires qualified telecommunication engineers, with a solid background in electronics, systems and information technology that are able to keep track with the development rate of the domain.

In this way we provide the future engineers with adequate competences, very competitive scientific training and modern technologies that allow them to be quickly hired in a modern and international environment. The course is perfectly adapted to the University "Politehnica" of Bucharest policy, respecting from one side the subject content and structure and on the other side the international opening offered to students.

| Date | Course lecturer | Instructor(s) for practical activities |
|---|---|---|
| | Conf. Dr. Alexandru RUSU, Conf. Dr. Madalina Berceanu | Conf. Dr. Alexandru RUSU |
| | | Conf. Dr. Madalina Berceanu |

| Date of department approval | Head of department |
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| Date of approval in the Faculty Council | Dean |
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