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

COURSE DESCRIPTION

1. Program identification information

1.1 Higher education institution	**National University of Science and Technology Politehnica Bucharest**
1.2 Faculty	**Electronics, Telecommunications and Information Technology**
1.3 Department	**Electronic Devices, Circuits and Architectures**
1.4 Domain of studies	Electronic Engineering, Telecommunications and Information Technology
1.5 Cycle of studies	Bachelor/Undergraduate
1.6 Programme of studies	Microelectronics, Optoelectronics and Nanotechnologies

2. Date despre disciplină

2.1 Course name (ro) (en)				Didactica specializării Didactics of the Specialization			
2.2 Course Lecturer				Oprescu Claudia			
2.3 Instructor for practical activities				Oprescu Claudia			
2.4 Year of studies	2	2.5 Semester	II	2.6. Evaluation type	E	2.7 Course regime	F
2.8 Course type		C	2.9 Course code	04.C.04.L.029		2.10 Tipul de notare	Nota

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

3.1 Number of hours per week	4	Out of which: 3.2 course	2	3.3 seminary/laboratory	2
3.4 Total hours in the curricula	56	Out of which: 3.5 course	28	3.6 seminary/laboratory	28
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.					45
Tutoring					6
Examinations					8
Other activities (if any):					10

3.7 Total hours of individual study	69.00
3.8 Total hours per semester	125
3.9 Number of ECTS credit points	5

4. Prerequisites (if applicable) (where applicable)

4.1 Curriculum	Completion of the following courses: Psychology of Education, Pedagogy I, Pedagogy II

4.2 Results of learning	• Knowledge of learning theories, and the motivational and cognitive factors involved in the educational process. • Knowledge of the fundamental concepts of pedagogy. • Application of pedagogical principles in the design of teaching activities. • Organization of educational activities according to students' cognitive and affective processes.

5. Necessary conditions for the optimal development of teaching activities (where applicable)

5.1 Course	The course will take place in a room equipped with a video projector and computer, with Internet access.
5.2 Seminary/ Laboratory/Project	The seminar will take place in a room equipped with a video projector and computer, with Internet access.

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)*

The subject Didactics of the Specialization is studied within the Psychopedagogical Training Program for certifying competencies for the teaching profession, Level I, having a predominantly applied character. It also makes use of the theoretical knowledge acquired by students in the previously studied subjects: Psychology of Education, Pedagogy I, Pedagogy II.

By studying this subject, students will become familiar with aspects concerning the organization, design, and delivery of teaching activities in technical pre-university education, depending on profile and specialization.

The subject addresses topics related to the national curriculum for technical and vocational education, the design and evaluation of teaching activities in technical pre-university education, with emphasis on developing teaching and assessment strategies specific to each specialization. The knowledge learned within this subject constitutes essential elements for a teacher's activity and will be used during teaching practice.

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	• Identifying and using curricular documents in vocational and technical education; correlating specific competencies with operational objectives and learning outcomes. • Designing the didactic approach: yearly planning, designing the learning unit, and developing lesson plans for different types of lessons. • Choosing and integrating teaching strategies, teaching–learning methods, and forms of organization specific to theoretical preparation and practical training. • Selecting and using educational means and resources (including learning platforms and software) appropriate to the specialty subject/module. • Designing, constructing, and applying formative and summative assessment tools in line with standards and item types. • Integrating digital technologies into the design and delivery of teaching activities and assessments, both face-to-face and online.
Transversal (General) Competences	• Observance of academic ethics and citation rules; continuous documentation from scientific sources and critical analysis of information. • Effective teamwork for interdisciplinary projects and clear communication of results. • Autonomy and responsibility in organizing learning situations and solving didactic problems. • Adaptability to new teaching–learning contexts and competent use of IT tools for teaching–learning–assessment.

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.)*

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.* • Identifies the main curricular documents in compulsory pre-university education. • Gives examples of specific instructional strategies. • Highlights the relationships among the components of a didactic strategy. • Describes the particularities of lesson types. • Identifies various assessment tools according to the form of assessment. • Correctly classifies item types. • Describes the structure of an instructional project. • Identifies specific software that makes teaching–learning of the subject more efficient.

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).* • Prepares documents specific to planning teaching activities. • Analyzes examples of learning situations. • Designs various learning activities. • Correlates the structural elements of the didactic strategy. • Develops assessment tools. • Designs different types of lessons. • Develops interdisciplinary projects in teams. • Uses new technologies in carrying out projects. • Communicates project results effectively. • Designs online teaching activities. • Designs online assessment tools.
Responsability and autonomy	*The student's capacity to autonomously and responsably apply their knowledge and skills.* • Respects the principles of academic ethics by correctly citing the bibliographic sources used. • Demonstrates receptiveness to new learning contexts. • Continuously documents from scientifically grounded sources. • Critically analyzes information sources. • Demonstrates autonomy in organizing the learning situation/context or the problem situation to be solved. • Demonstrates autonomy in selecting and using IT tools for teaching–learning–assessment.

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.)*

In the teaching–learning process, methods specific to different types of didactic activities will be used. Thus, in course activities, expository methods will be used: lecture, presentation, explanation combined with conversational–interactive methods: conversation, debate, problematization, demonstration, case studies, etc.

The applied seminar activities will be based on exercises, problematizations, case studies, etc. Learning situations will be created in which collaborative methods prevail, where students will practice collaboration, relationship, and communication skills both in face-to-face activities and in collaborative activities carried out on learning platforms.

Contexts favorable to debates and role-playing will be created.

Associated with the methods used, material resources will include PowerPoint presentations, official curricular documents (framework plans, school curricula, vocational training standards, digital textbooks), educational films, etc. Learning platforms and practice software will also be used.

The presentations contain essentialized information, schematically represented, so that the student can easily notice new elements conveyed and easily establish correlations between them. They include reflection sequences, useful links, and relevant bibliography.

10. Contents

COURSE		
Chapter	**Content**	**No. hours**
1	1. Technical and Vocational Education and Training (TVET) 1.1. The evolution of TVET from 1990 to the present 1.2. The place of TVET in the national education system 1.3. The current structure of TVET (professionalization routes, educational levels, organization of technological high school education by profiles and specializations) 1.4. Initial vocational training in TVET (National Qualifications System, link to vocational training standards).	2
2	2. TVET aims 2.1. General competencies, specific competencies, learning outcomes 2.2. The relationship between specific competencies and operational objectives.	1
3	3. The national curriculum for TVET 3.1. The structure of the TVET curriculum (TC, CD, CDL) 3.2. Modularization of the TVET curriculum 3.3. Aims of technical and vocational education (Focusing the TVET curriculum on learning outcomes; General and specific competencies for TVET). 3.4. Framework plans (components, structuring into curricular areas, TC, CD, CDL, specifics of the subjects/modules included in the Technologies curricular area) 3.5. The curriculum for specialty culture and practical training in the Technologies curricular area 3.6. School textbook, guides, and auxiliaries in TVET	2
4	4. Designing the didactic approach in TVET 4.1. Yearly planning 4.2. Designing the learning unit 4.3. Stages of designing the teaching activity	2
5	5 . Particularities of organizing and conducting teaching activities in specialty subjects/modules 5.1. Forms of organization of teaching activities specific to theoretical preparation 5.2. Forms of organization of teaching activities specific to practical training 5.3. Forms of organization of students’ activities	3
6	6. Designing the teaching activity 6.1. Formulating the lesson’s operational objectives 6.2. Didactic strategies specific to teaching specialty subjects/modules 6.2.1. Determining factors in choosing the didactic strategy 6.2.2. Types of strategies used in teaching specialty subjects/modules 6.3. Teaching–learning methods specific to theoretical preparation and practical training 6.4. Interactive techniques and innovative pedagogies in teaching technical subjects 6.5. The instructional environment and the specificity of means used in teaching the specialty subject/module 6.5.1. Characteristics of the instructional environment specific to teaching the specialty subject/module 6.5.2. Teaching aids used in teaching the specialty subject/module 6.5.3. Development of learning resources	10

7	7. Strategies for assessing learning outcomes in specialty subjects/modules 7.1. Standards for assessing learning outcomes 7.2 Forms and types of assessment 7.3. Assessment methods and tools	4
8	8. Project of instructional and assessment activities 8.1. Developing lesson plans (different types of lessons) 8.2. Developing assessment tests	4
	Total:	28

Bibliography:

1. Suport de curs- Online pe platforma Moodle UPB
2. Chicioreanu Teodora Daniela- Suport de curs- Online pe platforma Moodle UPB
3. Ianoş Graţiela - Suport de curs- Online pe platforma Moodle UPB
4. Bocoş, Muşata-Dacia (2013). Instruirea interactivă, Iaşi, Editura Polirom.
5. Ciobanu, Ciprian (2022), Invatarea in mediul virtual ghid de utilizare a calculatorului in educatie,editura Polirom.
6. Ciolan, Lucian (2008). Învăţarea integrată. Fundamente pentru un curriculum transdisciplinar.Iaşi, Editura Polirom.
7. Ion Albulescu, Horaţiu Catalano (2021) Procesul de instruire în mediul online, Editura Didactica Publishing House.
8. Frantiska, Joseph Jr., (2018). Visualization Tools for Learning Environment Development, 1st Edition, Springer International Publishing.
9. Frey, Nancy, Fisher, Douglas (2011). The Formative Assessment Action Plan, Practical Steps to More Successful Teaching and Learning. Association for Supervision and Curriculum Development, Alexandria, Virginia USA.
10. Hattie, John (2014). Învăţarea vizibilă. Ghid pentru profesori. Bucureşti: Editura TREI.
11. Marzano, J. Robert, (2015). Arta şi ştiinţa predării. Un cadru cuprinzător pentru o instruire eficientă. Bucureşti: Editura TREI.
12. Negret, Dobridor, I., Pânişoară, I. O. (2005). Ştiinţa învăţării, Iaşi, Ed. Polirom.
13. Oprea, Crenguţa, Lăcrămioara (2009). Strategii didactice interactive, Bucureşti, EDP. RA
14. Oproiu G.C. (2013). Didactica Modulelor Mecanice, Editura Matrix Rom, Bucureşti.
15. Serravallo, Jennifer (2010). Teaching Reading in Small Groups: Differentiated Instruction for Building Strategic, Independent Readers, Heinemann.
16. Graţiela Ianoş (2024). Profesor de azi. Ghidul tău pentru debutul în cariera didactică. Bucureşti: Editura Universitară. ISBN 978-606-28-1720-6

SEMINARY

Crt. no.	Content	No. hours
1	1. Analysis of curricular documents: • Framework plans (components, structuring into curricular areas, TC, CD, CDL, specifics of the subjects/modules included in the Technologies curricular area) • Curriculum for specialty culture and practical training in the Technologies curricular area • School textbook, guides, and auxiliaries in TVET (evaluation of the school textbook)	4

2	2. Developing curricular design documents for the specialty subject/modules • Drafting the annual yearly planning • Designing the learning unit	4
3	3. Designing instructional strategies • Formulating operational objectives for a specific topic; • Applying teaching methods used in delivering a lesson; • Correlating teaching aids with methods, operational objectives, and forms of organizing students' activities. • Designing various instructional strategies.	6
4	4. Analysis of the stages and events of instruction for each type of lesson • Analysis of didactic scenarios related to types of strategies.	4
5	5. Developing lesson plans (different types of lessons)	4
6	6. Constructing assessment tools for different learning situations • Examples of formative assessment activities • Developing summative assessment tools	6
	Total:	28

Bibliography:

1. Suport de curs- Online pe platforma Moodle UPB
2. Chicioreanu Teodora Daniela- Suport de curs- Online pe platforma Moodle UPB
3. Ianoș Grațiela - Suport de curs- Online pe platforma Moodle UPB
4. Bocoş, Muşata-Dacia, (2013), Instruirea interactivă, Iaşi, Editura Polirom.
5. Ciobanu, Ciprian (2022), Invatarea in mediul virtual ghid de utilizare a calculatorului in educatie,editura Polirom.
6. Ciolan, Lucian (2008). Învățarea integrată. Fundamente pentru un curriculum transdisciplinar.Iaşi, Editura Polirom.
7. Ion Albulescu, Horațiu Catalano (2021) Procesul de instruire în mediul online, Editura Didactica Publishing House.
8. Grațiela Ianoș (2024). Profesor de azi. Ghidul tău pentru debutul în cariera didactică. București: Editura Universitară. ISBN 978-606-28-1720-6
9. Negret, Dobridor, I., Pânişoară, I. O., (2005), Ştiinţa învăţării, Iaşi, Ed. Polirom.
10. Negreţ, Dobridor, I., (2005), Didactica Nova, Bucureşti, Ed. Aramis.
11. Oprea, Crenguța, Lăcrămioara, (2009) Strategii didactice interactive, Bucureşti, EDP. RA
12. Oproiu G.C.,(2003) Elemente de didactica disciplinelor tehnice, Ed. Printech, Bucureşti.
13. Popovici, M.M., Chicioreanu, T. D., (2003) Proiectarea didactică, Ed. Printech, Bucureşti.
14. SNEE - coord. Adrian Stoica, Evaluarea curentă şi examenele - ghid pentru profesori, Bucureşti, Pro GNOSIS, 2001.

11. Evaluation

Activity type	11.1 Evaluation criteria	11.2 Evaluation methods	11.3 Percentage of final grade
11.4 Course	Active participation in the course. Correct use of specific concepts and terms.	Observation of students' activity.	30%
	Oral quizzes	Oral quizzes	20%

11.5 Seminary/laboratory/project	Complete fulfillment of the work tasks in didactic activities Coherent and fluent use of specific terms Developing projects for different types of lessons and constructing assessment tools.	Observation of students' activity Portfolio Oral quizzes	50%
11.6 Passing conditions			
Obtaining at least 50% of the total score			

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)

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Date	Course lecturer	Instructor(s) for practical activities
25.09.2025	Oprescu Claudia	Oprescu Claudia

Date of department approval

Head of department

Prof. Dr. Claudius Dan

Date of approval in the Faculty Council

Dean

Prof. Dr. Eng. Radu Mihnea Udrea