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)				Servicii Internet Internet Services			
2.2 Course Lecturer				Dr. ing. Gabriel PETRICĂ			
2.3 Instructor for practical activities				Dr. ing. Gabriel PETRICĂ			
2.4 Year of studies	1	2.5 Semester	2	2.6. Evaluation type	V	2.7 Course regime	F
2.8 Course type		S	2.9 Course code	04.D.02.L.027		2.10 Tipul de notare	Nota

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

3.1 Number of hours per week	2	Out of which: 3.2 course	1	3.3 seminary/laboratory	1
3.4 Total hours in the curricula	28	Out of which: 3.5 course	14	3.6 seminary/laboratory	14
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.					20
Tutoring					0
Examinations					2
Other activities (if any):					0

3.7 Total hours of individual study	22.00
3.8 Total hours per semester	50
3.9 Number of ECTS credit points	2

4. Prerequisites (if applicable) (where applicable)

4.1 Curriculum	Not applicable
4.2 Results of learning	Acquiring the following knowledge: • Computers Programming

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 video projector and computer.

5.2 Seminary/ Laboratory/Project	The practical applications will take place in a room equipped with computer systems, the required software, 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 main objective of the course consists in acquiring the basic principles related to the use of computer systems in LANs and Internet, the design of Web pages in the HTML language and the knowledge of the functionalities of main Web services (HTTP, FTP, e-mail).
The course will acquaint students with basic information used to design and create Web pages (Web programming techniques like HTML, CSS, JavaScript).
The main telecommunications and information access services will be presented (such as electronic mail, file transfer protocol, remote user connection, World Wide Web service and modern multimedia platforms).
Aspects related to information security within the Internet environment will be highlighted (malware, spam messages, data privacy, types of cyber-attacks).

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	Demonstrates basic knowledge of using basic Internet services and Web programming / web page structure. Correlate knowledge. Put web programming knowledge into practice. Applies standardized methods and tools, specific to the field, to carry out the evaluation and diagnosis process of a situation, depending on the identified/reported problems, and identifies solutions. Argues and analyzes coherently and correctly the context of application of the basic knowledge of the field, using key concepts of the discipline and specific methodology.
Transversal (General) Competences	Works in a team and communicates effectively, coordinating efforts with others to solve problem situations of medium complexity. Autonomy and critical thinking: the ability to think in scientific terms, search and analyze data independently, and draw and present conclusions / identify solutions. Ability to analyze and synthesize: presents the acquired knowledge in a synthetic way, as a result of a process of systematic analysis.

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.* • Defines specific notions of protocols and network architectures. • Describes/classifies notions/processes/phenomena/structures specific to Web programming languages (HTML, CSS, JavaScript). • Highlights consequences and relationships. • List the most important stages that marked the development of the Internet environment.
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).* • Selects and groups relevant information in a given context. • Work productively in a team. • Develops code in markup and Web programming languages (JavaScript). • Process data and get results (JavaScript). • Electronic information management. • Solve practical applications in the online environment (websites). • Analyze and compare results. • Design visual aspects for text / multimedia and website layouts. • Identifies solutions and develops plans to solve problems.
Responsability and autonomy	*The student's capacity to autonomously and responsably apply their knowledge and skills.* • Demonstrates responsiveness to new learning contexts. • Demonstrates collaboration with other colleagues and teaching staff in carrying out teaching activities. • Demonstrates autonomy in organizing the learning situation/context or the problem situation to be solved. • Promotes/contributes new solutions related to the field of expertise to improve existing knowledge. • Realizes the value of his contribution in the field of engineering to the identification of viable/sustainable solutions to solve various problems in the professional activity. • Apply principles of professional ethics/deontology in the analysis of the technological impact of the proposed solutions in the specialized field.

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 teaching process will explore expository (lecture, exposition) and conversational-interactive teaching methods, based on discovery learning models facilitated by direct and indirect exploration of reality (experiment, demonstration, modeling), but also on action-based methods, such as exercise, practical activities and problem solving.
In the teaching activity, lectures will be used, based on Power Point presentations, electronic documentation and multimedia support, materials that will be made available to the students. Each course will start with a recap of the chapters already covered, with an emphasis on the concepts covered in the last course. Presentations use images and diagrams so that the information presented is easy to understand and assimilate.
This discipline covers information and practical activities designed to support students in their learning efforts and the development of optimal collaborative and communicative relationships in a climate

conducive to discovery learning.
Practicing active listening and assertive communication skills, as well as feedback construction mechanisms, will be considered as ways of behavioral regulation in various situations and adapting the pedagogical approach to the students' learning needs. The ability to work in a team will be practiced to solve different learning tasks and some tasks organized by groups of students.

10. Contents

COURSE		
Chapter	**Content**	**No. hours**
1	The Internet - history and evolution	2
2	Equipment and types of Internet connections (wired - dial-up, CATV, LAN / wireless - WiFi, GSM, satellite)	2
3	The hardware of a computer network. Network topologies. IP addresses. Client-server architecture. Protocols. Ports	2
4	Main Internet services: World Wide Web, File Transfer Protocol	2
5	Main Internet services: E-mail	2
6	Other Internet applications: Instant Messaging, VoIP, multimedia, Remote, P2P programs, social networks, e-learning, Web mapping, e-commerce and Internet Banking	2
7	Vulnerabilities and threats. Malware. Ensuring the security of information.	2
	Total:	14

Bibliography:

1. G. Petrică, Servicii Internet, suport de curs, available on the subject's page from POLITEHNICA elearning platform - https://curs.upb.ro.
2. Angelica Bacivarov, C. Ciuchi, G. Petrică, Servicii Internet, Edit. Matrix, Bucureşti, 2011, ISBN 978-973-755-743-8
3. G. Petrică, Instrumente pentru procesarea informaţiilor electronice, Vol. 1. Sisteme de calcul, 2022, ISBN 978-973-0-36046-2 (electronic edition), https://www.euroqual.pub.ro/wp-content/uploads/instrumente_procesarea_informatiilor_electronice_1.pdf.
4. Electronic support on the website www.euroqual.pub.ro.

LABORATORY		
Crt. no.	**Content**	**No. hours**
1	Media and equipment for transmitting information on the Internet. The hardware components of a LAN. MAC address. IP address. URLs. The DNS system.	2
2	Creating web pages using the HTML language. Basic markup for text formatting. Colors, backgrounds. Images, hyperlinks. Special characters in HTML. Tables.	2
3	Advanced HTML markup. Insertion of audio-video objects. Designing the layout of a Web page. SEO techniques. HTML5 markup.	2
4	Using Styles (CSS) for a Complex Web Site. Properties for text, links, backgrounds. The Box model for an HTML element. CSS3. Responsive CSS.	2
5	JavaScript scripts. Language syntax. Ways to use JavaScript scripts. Interpretation of events.	2

6	Web forms for online retrieval and processing of data / options. The elements of a form. Techniques for processing the entered data.	2
7	Web browsers. Data security and privacy. Protection of personal data. Vulnerabilities in plugins. Anonymity. Digital certificates for web servers.	2
	Total:	14

Bibliography:

1. G. Petrică, Servicii Internet, available on the subject's page from POLITEHNICA elearning platform - https://curs.upb.ro.
2. A. Bacivarov, G. Petrică, C. Ciuchi, Programare web. Aplicatii în HTML, CSS, JavaScript, ISBN 978-606-25-0236-2, Edit. Matrix ROM, Bucureşti, 2016.
3. G. Petrică, Servicii Internet - Îndrumar de laborator, electronic edition, UPB, 2022.
4. Electronic support on the website www.euroqual.pub.ro.

11. Evaluation

Activity type	11.1 Evaluation criteria	11.2 Evaluation methods	11.3 Percentage of final grade
11.4 Course	Application of theory to specific problems	Interactive activities during the semester	20%
	Knowledge of fundamental theoretical notions	Final verification test (written)	20%
11.5 Seminary/laboratory/project	Choosing and applying optimal solutions	Making and presenting the homework (designing a website)	40%
	Correct use of specific tools	Test on computer (practical test)	20%
11.6 Passing conditions			
• Fulfilling the obligations related to laboratory activity: laboratory reports and oral presentations / completing homework. • To promote the discipline, the student must obtain at least 50% of the total score, in compliance with all the requirements specified in the POLITEHNICA Bucharest / ETTI Regulations.			

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)

- Completion of this discipline gives students the ability to solve specific problems and propose ideas to improve the existing situation in Web programming and the architecture of online systems and services
- In the development of the content of the discipline, knowledge / aspects / phenomena described by specialized literature and own research published / presented in national and international scientific journals and conferences were taken into account
- Through the activities carried out, it is considered the development of the graduate's skills to manage practical situations that he may face in real life in order to increase his contribution to the improvement of the socio-economic environment

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Date	Course lecturer	Instructor(s) for practical activities
20.09.2025	Dr. ing. Gabriel PETRICĂ	Dr. ing. Gabriel PETRICĂ

Date of department approval

22.10.2025

Head of department

Prof. Dr. Claudius Dan

Date of approval in the Faculty Council

Dean

Prof. dr. ing. Radu Mihnea UDREA