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)				Dezvoltarea Aplicaţiilor de Comerţ Digital Digital Commerce Application Development			
2.2 Course Lecturer				Conf. Dr. Mădălin Corneliu Frunzete			
2.3 Instructor for practical activities				Conf. Dr. Mădălin Corneliu Frunzete			
2.4 Year of studies	3	2.5 Semester	2	2.6. Evaluation type	V	2.7 Course regime	F
2.8 Course type		S	2.9 Course code	04.S.05.L.033		2.10 Tipul de notare	Nota

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

3.1 Number of hours per week	3	Out of which: 3.2 course	1	3.3 seminary/laboratory	2
3.4 Total hours in the curricula	42	Out of which: 3.5 course	14	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.					28
Tutoring					0
Examinations					5
Other activities (if any):					0

3.7 Total hours of individual study	33.00
3.8 Total hours per semester	75
3.9 Number of ECTS credit points	3

4. Prerequisites (if applicable) (where applicable)

4.1 Curriculum	Computer Programming and Programming Languages 1. Computer Programming and Programming Languages 2.
4.2 Results of learning	Familiarity with the JavaScript language (preferably with the React.js and/or Node.js ecosystems); familiarity with working with APIs. Interest in digital development on the backend and frontend (Full-stack).

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

5.1 Course	PowerPoint presentations Presentation and detailing of course-specific concepts in an interactive manner
5.2 Seminary/ Laboratory/Project	Attendance at laboratory sessions is mandatory (according to undergraduate study regulations). Students may work on their own computers during sessions in rooms 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)*

Introducing students to the field of application development for digital commerce. Familiarizing them with modern digital commerce platforms. Introduction to decentralized development and familiarization with all aspects of developing a native online application. Familiarization with the VTEX IO development platform, based on JavaScript. Learning the modules behind a digital commerce platform. Developing such a module or an equivalent application.

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	C3. Applying basic knowledge, concepts, and methods regarding computer system architecture, microprocessors, microcontrollers, and programming languages and techniques.
Transversal (General) Competences	CT1. Methodical analysis of problems encountered in activity, identifying the elements for which established solutions exist, thus ensuring the fulfillment of professional tasks. CT3. Adapting to new technologies, professional and personal development through continuous learning using printed documentation sources, specialized software, and electronic resources in Romanian and at least one international language.

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.* Is able to answer a series of questions based on a portfolio of activities carried out during the semester, as part of an oral examination. Describes the command (or set of commands) and corresponding arguments required to solve a specific problem on the command line. Describes, explains, and highlights the consequences of running one (or more) command-line commands. Describes general concepts of digital commerce. Evaluates the need for products that can be marketed online.

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).* Installs under a virtual machine, starts, and interacts with a database. Defines basic marketing concepts and creates relationships between product types and categories. Defines learning algorithms regarding user behavior,
Responsability and autonomy	*The student's capacity to autonomously and responsably apply their knowledge and skills.* Demonstrates receptiveness to new learning contexts. Reviews in advance the course and laboratory materials insofar as they are provided. In case of absence, independently goes through the taught material made available. Completes homework individually and autonomously, respecting academic ethics. Respects the principles of academic ethics by individually performing the activities marked as such and correctly citing the bibliographic sources used, if the situation requires it. Applies principles of ethics/professional deontology when analyzing the technological impact of proposed solutions in the field on the environment.

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 materials used are the course notes and presentations, also available in electronic format. Starting from the analysis of students' learning characteristics and their specific needs, the teaching process will explore both expository methods (lecture, presentation), problematization, and conversational-interactive methods, based on action-based learning models such as exercises, practical activities, and problem solving. Interactivity with students through the associated practical component. Time slots are reserved for presenting, analyzing, and solving practical problems (modeling reality). In teaching, lectures will be used, based on PowerPoint presentations, which—depending on technical possibilities—will be presented in front of students and/or via a videoconferencing environment such as Teams. These will be made available to students. Each course will begin with a short recap of the previous lesson to ensure continuity of the covered concepts. The presentations use, insofar as possible, real-life application examples of the concepts taught, so that the information presented is easy to understand and assimilate. For the practical part, teaching is based on the expository method (covering the communication and demonstration functions). The dialogue during the course continues in the practical sessions. These are necessary for preparing students for homework and ongoing assessments. Feedback will also be used as a way to adapt the pedagogical approach to students' learning needs.

10. Contents

COURSE		
Chapter	**Content**	**No. hours**
1	What is VTEX IO? What is the Store Framework and how is it used?	2
2	How to set up a VTEX test environment. The administration interface of an online store.	2
3	Product page, product search, and purchasing system.	2
4	How to create your own graphical interface. How to improve your store with the help of applications,	2
5	Your first application written in VTEX IO. How to promote your creations—online stores and digital marketing.	2

6	Preparing the laboratory project—requirements, examples, and possibilities.	2
7	An example of a virtual store integrating all presented concepts. Recap.	2
	Total:	14

Bibliography:

1. VTEX Learn Hub: https://learn.vtex.com
2. VTEX Developers Hub: https://developers.vtex.com
3. VTEX GitHub Repository: https://github.com/vtex
4. Sarwar, B., Karypis, G., Konstan, J., & Riedl, J. (2000, October). Analysis of recommendation algorithms for e-commerce. In Proceedings of the 2nd ACM Conference on Electronic Commerce (pp. 158-167).
5. Holý, V., Sokol, O., & Černý, M. (2017). Clustering retail products based on customer behaviour.

LABORATORY

Crt. no.	Content	No. hours
1	Introduction to e-commerce	2
2	Database installation. Product management.	2
3	Defining roles and users	2
4	Defining product categories	4
5	Identifying algorithms for managing product pages	4
6	Implementing ML algorithms for managing user behaviors	4
7	Implementing prediction algorithms for inventory management	4
8	Creating all links depending on the implemented store	4
9	Project presentations and colloquium	2
	Total:	28

Bibliography:

1. Wang, G., Xie, S., Liu, B., & Yu, P. S. (2012). Identify online store review spammers via social review graph. ACM Transactions on Intelligent Systems and Technology (TIST), 3(4), 1-21.
2. Lin, R., Kraus, S., & Tew, J. (2004). OSGS—A Personalized Online Store for E-Commerce Environments. Information retrieval, 7(3), 369-394.
3. Sims, L. (2018). Creating Your Online Store. In Building Your Online Store With WordPress and WooCommerce: Learn to Leverage the Critical Role E-commerce Plays in Today's Competitive Marketplace (pp. 77-111). Berkeley, CA: Apress.

11. Evaluation

Activity type	11.1 Evaluation criteria	11.2 Evaluation methods	11.3 Percentage of final grade

11.4 Course	Sims, L. (2018). Creating Your Online Store. In Building Your Online Store With WordPress and WooCommerce: Learn to Leverage the Critical Role E-commerce Plays in Today's Competitive Marketplace (pp. 77-111). Berkeley, CA: Apress.	- multiple-choice tests, to be completed throughout the semester - assignments	50
11.5 Seminary/laboratory/project	-understanding the interactive demonstrations in the laboratory -involvement in laboratory activities -development of an individual application.	-laboratory colloquium	50
11.6 Passing conditions			
Min 50 points			

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)

Based on the knowledge accumulated from this course, the future electronics engineer will be able to implement online stores aligned with the latest requirements in the digital commerce industry.

Date	Course lecturer	Instructor(s) for practical activities
21.09.2026	Conf. Dr. Mădălin Corneliu Frunzete	Conf. Dr. Mădălin Corneliu Frunzete

Date of department approval	Head of department
22.09.2026	Prof. Dr. Claudius Dan

Date of approval in the Faculty Council	Dean
22.09.2026	Prof. Dr. Mihnea Udrea

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