

<b>University</b>	Valahia University of Targoviste
<b>Faculty</b>	Faculty of Electrical Engineering, Electronics, and Information Technology
<b>Department</b>	Department of Electronics, Telecommunications and Energy Engineering
<b>Rank in personal establishment</b>	13
<b>Role</b>	Associate Professor
<b>Subjects in the curriculum</b>	<ul style="list-style-type: none"> <li>- Electronic Devices</li> <li>- Digital integrated circuits 1</li> <li>- Digital integrated circuits 2</li> <li>- Fundamentals of data acquisition systems</li> <li>- Digital electronics / Digital systems</li> </ul>
<b>Scientific Field</b>	Electronic engineering, telecommunications, and information technologies
<b>Job Description</b>	<p>Associate Professor, position 13, disciplines:</p> <ul style="list-style-type: none"> <li>- Electronic Devices - 2 hours course, week / 1 hour seminar, week / 1 hour laboratory, week (semester I).</li> <li>- Digital integrated circuits 1 - 2 hours course, week / 1 hour seminar, week (semester II).</li> <li>- Digital integrated circuits 2 - 2 hours course, week (semester I).</li> <li>- Fundamentals of data acquisition systems - 2 hours course, week / 1 hour laboratory, week (semester II).</li> <li>- Digital electronics / Digital systems - 2 hours course, week (semester II).</li> </ul>
<b>Tasks / related activities</b>	<ul style="list-style-type: none"> <li>- teaching activities, lectures, seminars, and laboratory work, in accordance with the position listed in the staffing plan.</li> <li>- supervision of undergraduate thesis projects.</li> <li>- supervision of master's dissertation projects.</li> <li>- serving as a member of undergraduate examination boards.</li> <li>- serving as a member of master's dissertation committees.</li> <li>- tutoring and student consultation activities.</li> <li>- advising student scientific circles and research groups.</li> <li>- participation in academic councils and committees in support of education.</li> <li>- involvement in other teaching, practical, and research activities included in the academic curriculum.</li> <li>- participation in additional duties as assigned by higher-level authorities.</li> </ul>
<b>The minimum salary</b>	7.050 RON Associate Professor
<b>Competition Program</b>	<ul style="list-style-type: none"> <li>- April 10, 2025 – August 18, 2025 - Registration of candidates with the commission's resolution regarding the fulfillment of the standards and the opinion of the Legal Office</li> <li>- April 10, 2025 – May 30, 2025 - Establishment of competition committees and appeals committees, validation in the Board of Directors and the Senate</li> <li>- in max. 48 hours from its issuance, but with min. 5 working days before the first test - Informing the candidate by the Legal Office regarding the fulfillment of the legal conditions for submission to the competition</li> <li>- August 25, 2025 - Display of the list of candidates with admitted files</li> <li>- August 25, 2025 - Publication on the web page of the announcement regarding the day, time and place of the competition tests, the CV and the verification sheet for meeting the minimum standards, for each candidate</li> <li>- August 25, 2025 - Transmission of candidate files, with the approval of the Legal Office, to the members of the competition commissions</li> <li>- September 2 – 8, 2025 - Conducting the competition tests. Report of the chairman of the competition committee</li> <li>- September 9, 2025 - Publication of the contest result on the web page</li> <li>- September 10 – 12, 2025 - Submission of appeals</li> <li>- September 15, 2025 - Resolution of appeals</li> <li>- September 16, 2025 - Approval of the report on the competition by the faculty</li> </ul>

	<p>council</p> <ul style="list-style-type: none"> <li>- September 17 – 19, 2025 - Validation of the competition results by the Administrative Council; Approval of the report on the competition by the UV Senate</li> <li>- October 1, 2025 - Appointment to the post by the decision of the rector</li> </ul>
<b>Date of the announcement publication in the Official Monitor</b>	Official Monitor of Romania, no. 93/April 28, 2025, Part III.
<b>Scope of Exam Topics</b>	<p><b>Topics</b></p> <p><b>1. Electronic Devices</b></p> <p><i>Course topics:</i> Basics of semiconductor physics. Silicon. Carrier injection and relaxation processes. The PN junction at thermodynamic equilibrium. The PN junction diode. Bipolar Junction Transistor (BJT). Metal-Oxide-Semiconductor Capacitor (MOS capacitor). Junction Field Effect Transistor (JFET).</p> <p><i>Seminar topics:</i> Energy-wavelength relationships, determination of Miller indices, thermal velocity of electrons in silicon, occupancy probability of energy levels. Calculation of carrier concentrations at thermodynamic equilibrium, Fermi level position, and energy band diagrams. Carrier mobility, diffusion length, conductivity and resistivity of silicon, carrier lifetime, diffusion length, Maxwell relaxation time, Debye length. PN junction at thermodynamic equilibrium. BJT in active-normal mode: energy band diagram, electrostatic potential, electric field. BJT in saturation mode. MOS capacitor, Fermi potential, maximum depletion width, energy band diagram.</p> <p><i>Laboratory topics:</i> 1) Introductory notions in Python. 2) Silicon – recombination processes. 3) PN junction. 4) Bipolar Junction Transistor. 5) Metal-Oxide-Semiconductor Capacitor. 6) Junction Field Effect Transistor.</p> <p><b>2. Digital integrated circuits 1</b></p> <p><i>Course topics:</i> Digital systems – introductory concepts. Logic variables and functions. Basic logic functions – properties of logic functions. Canonical forms of logic function representation. Implementation of digital systems using logic gates. Logic function minimization with Karnaugh maps. Combinational logic circuits – encoder, decoder, multiplexer, demultiplexer, adders, comparators, parity detectors. Asynchronous/synchronous sequential logic circuits. Bistable flip-flops. Counter circuits. Register circuits.</p> <p><i>Seminar topics:</i> Basic logic functions. Implementation of basic logic functions. Encoders, decoders, multiplexers, demultiplexers. Comparators, adders, arithmetic logic unit (ALU). Bistable flip-flops.</p> <p><b>3. Digital integrated circuits 2 / Digital electronics / Digital systems 2</b></p> <p><i>Course topics:</i> Digital systems – introductory concepts. Formal description of finite state machines. Implementation of finite state machines. Feedback-based finite state machines. Finite state machines built using JK flip-flop registers. Memories – ROM, PROM, EPROM, EEPROM. Random Access Memory (RAM). Field-Programmable Gate Arrays (FPGAs).</p> <p><b>4. Fundamentals of data acquisition systems</b></p> <p><i>Course topics:</i> Process computers. DAS with one or multiple analog input signals. DAS with digital input signals available on parallel buses. Data acquisition systems using microcontrollers. Signal conditioning circuits. Digital-to-analog converters. Analog-to-digital converters. Sample-and-</p>

hold circuits. Modulation-demodulation amplifiers. Isolation amplifiers. General principles regarding the structure and operation of a digital processing system.

*Laboratory topics:* 1) Basic principles in using a development board – Arduino Uno. 2) Measuring environmental parameters using analog sensors and Arduino Uno. 3) Measuring light intensity and presence using digital sensors and Arduino Uno. 4) Using a rotary encoder and measuring heart rate with Arduino Uno. 5) Flame sensor analysis and event presence detection using a buzzer and Arduino Uno. 6) IoT system using ESP32 and DHT22 sensors.

#### **References:**

##### **1. Electronic Devices**

- Dascălu D., Profirescu M., Rusu A., Costea I., *Dispozitive și circuite electronice*, Editura didactică și pedagogică, București, 1982.
- Sachelarie D., *Bazele dispozitivelor semiconductoare*, Editura MatrixROM, București, 2003.
- Sachelarie D., Predușcă G., Coandă H.G., *Probleme fundamentale de microelectronică*, Editura MatrixROM, București, 2004.
- Lakatoș E.Ș., *Dispozitive semiconductoare fundamentale*, Editura Agir, 2008.
- Liang Y.D., *Introduction to programming using Python*, Pearson, 2013.
- Fiore M., *Semiconductor devices: theory and application*, ebook, 2019.

##### **2. Digital integrated circuits 1**

- Ștefan G., Bistriceanu V., *Circuite integrate digitale - probleme, proiectare*, Editura didactică și pedagogică, București, 1992.
- Spânulescu I., Spânulescu S., *Circuite integrate digitale și sisteme cu microprocesoare*, Editura Victor, 1996.
- Mureșan T., Gontean A., Băbăiță M., Demian P., *Circuite integrate numerice – aplicații*, Editura de vest, Timișoara, 1996.
- Nicula D., Toașe G., *Electronică digitală, dispozitive, circuite, proiectare*, vol. I, Editura Tehnica, 2005.
- Nicula D., *Electronică digitală - carte de învățatură 2.0*, Editura Universității Transilvania din Brașov, 2015.
- Frenzel L., *Practical electronic design for experimenters*, McGraw-Hill Education, 2020.

##### **3. Digital integrated circuits 2 / Digital electronics / Digital systems 2**

- Ștefan G., Bistriceanu V., *Circuite integrate digitale - probleme, proiectare*, Editura didactică și pedagogică, București, 1992.
- Ion F., *Electronică digitală – memorii ROM, RAM, circuite CPLD, FPGA*, Editura Bibliotheca, 2009.
- Bostan I., *Circuite logice secvențiale. Teorie și aplicații*, Editura MatrixRom, București, 2015.
- Nicula D., *Electronică digitală - carte de învățatură 2.0*, Editura Universității Transilvania din Brașov, 2015.
- Mahalu G., *Sisteme digitale, secvențiale. Teorie și aplicații*, Editura MatrixRom, București, 2020.
- Oniga S., *Circuite digitale I – note de curs*, Editura U.T.Press, Cluj-Napoca, 2020.

##### **4. Fundamentals of data acquisition systems**

- Di Paolo Emilio Maurizio, *Data acquisition systems*, Springer International Publishing AG, 2015.

	<ul style="list-style-type: none"> <li>- <i>Arduino pentru începători</i>, robofun.ro, 2015.</li> <li>- Agoston K., <i>Sisteme moderne de achiziții și prelucrări de date – aplicații</i>, Editura University Press, 2019</li> <li>- Baraua A., <i>Pipelined analog to digital converter and fault diagnosis</i>, IOP Publishing Ltd, 2020.</li> <li>- Saracin C., Saracin M., <i>Sisteme de achiziții de date</i>, Editura MatrixRom, București, 2022.</li> </ul> <p>Georgescu V.C., <i>De la SCADA către Industry 4.0</i>, Editura MatrixRom, București, 2023.</p>
<b>Lecture (day, hour, location)</b>	<ul style="list-style-type: none"> <li>- Day: September 4, 2025</li> <li>- Hour: 12:30</li> <li>- Location: Valahia University of Targoviste, Faculty of Electrical Engineering, Electronics and Information Technology, building A, Classroom 101.</li> </ul>
<b>Description of the competition procedure</b>	The nominated candidates will conduct a presentation detailing their most notable professional accomplishments and their academic career growth strategy.
<b>List of Documents</b>	<ol style="list-style-type: none"> <li>1. The exam application, signed by the candidate, which includes: a declaration of own responsibility regarding the veracity of the information presented in the file <b>and the Commission's resolution regarding the information in the verification of the fulfilment of standards for the exam application (with the signatures of the members) (Document No. 1)</b></li> <li>2. The proposal for the development of the university career regarding scientific activities and teaching skills, for candidates for teaching positions, and, respectively, scientific activities and research skills, for candidates for research positions; the proposal that is written by the candidate, comprises a maximum of 10 pages and is one of the main criteria for assessing candidates (<b>Document No. 2</b>).</li> <li>3. The candidate's curriculum vitae in printed and electronic format. The candidate's Europass curriculum vitae must include: <ul style="list-style-type: none"> <li>- information about the academic studies and diplomas obtained;</li> <li>- information about professional experience and relevant previous jobs;</li> <li>- information about research and development projects led as project manager and grants obtained, if there are such projects or grants, indicating for each the source of funding, the amount of funding, and the main publications or patents resulted;</li> <li>- information about awards or other recognitions of the candidate's scientific contributions (<b>Document No. 3</b>).</li> </ul> </li> <li>4. The candidate's list of publications in printed and electronic format. The complete list of the candidate's publications will be structured as follows: <ul style="list-style-type: none"> <li>- the list of up to 10 publications considered by the candidate to be the most relevant for the field of the disciplines of the position for which the candidate is applying;</li> <li>- the doctoral thesis or theses;</li> <li>- invention patents and other titles of industrial property;</li> <li>- books and chapters in books;</li> <li>- full-length articles/studies published in the main international scientific journals;</li> <li>- full-length publications, within the main international conferences in the field;</li> <li>- other scientific works and contributions or, if applicable, in the</li> </ul> </li> </ol>

field of artistic creation (**Document No. 4**).

5. The university standards verification form for competition is available in both printed and electronic format, the standard format of which is provided in the university's methodology. The candidate completes and signs the university standards verification form (**Document No. 5**).
6. Documents regarding the possession of a doctoral diploma/proof of enrollment in a doctoral study program, without exceeding the maximum study period, including acceptable extensions according to the law: the notarized copy of the doctoral diploma and, if the original doctoral diploma is not recognized in Romania, the certificate of recognition or equivalence (**Document No. 6**).
7. The summary, in Romanian and in an international language, of the doctoral thesis, on a maximum of one page for each language (**Document No. 7**).
8. Candidate's Self-Declaration of Incompatibility status in accordance with the Higher Education Law No. 199/2023, with subsequent amendments and completions, including any incompatibility situations that would arise upon winning the competition, or the absence of such incompatibility situations (**Document No. 8**).
9. Notarized copies of other diplomas certifying the candidate's studies (**Document No. 9**).
10. A copy of the identity card or, if the candidate does not have an identity card, the passport or another identity document issued for a purpose equivalent to the identity card or passport (**Document No. 10**).
11. If the candidate has changed the name, copies of documents certifying the name change - marriage certificate or proof of name change (**Document No. 11**).
12. Up to 10 of the candidate's publications, patents, or other works, in electronic format, selected by the candidate and considered to be the most relevant for their professional achievements (**Document No. 12**).
13. Candidates for the positions of associate professor or scientific researcher grade II must include in the competition file at least three recommendation letters from personalities in the respective field, from the country or abroad, outside the higher education institution whose position is being contested, who have agreed to write these recommendation letters regarding the candidate's professional qualities. Candidates for the positions of full professor or scientific researcher grade I must include in the competition file at least three recommendation letters from personalities in the respective field from abroad, who have agreed to write these recommendation letters regarding the candidate's professional qualities. In the case of scientific fields with a Romanian specific, the recommendation letters for candidates for the positions of professor or scientific researcher grade I may also come from personalities in the respective field from Romania, outside the higher education institution whose position is being contested (**Document No. 13**).
14. Criminal record certificate.
15. Certificate of behavioural integrity.
16. Medical certificate issued on a specific form adopted by joint order of the Minister of Education and the Minister of Health.
17. Medical opinion for the practice of teaching, issued in accordance with the provisions of the joint order of the Minister of Education and the Minister of Health.
18. Habilitation certificate, only for the position of professor.
19. Copy of the habilitation certificate/order regarding the granting of the

	status of doctoral supervisor. <b>20.</b> Copy of the certificate/attestation of the Psychopedagogical Module. <b>21.</b> Receipt for the competition registration fee.
<b>The application form is sent to the address of</b>	Valahia University of Targoviste Registry Sinaia Alley, no. 13, Targoviste, Dambovita, Romania, 130004.

Dean,  
Associate Professor PhD. Eng. Nicoleta ANGELESCU