

Field name	Description
University	„Constantin Brâncuși” University of Târgu-Jiu
Faculty	Faculty of Engineering
Department	Energy, Environment and Agrotourism
Position in the list	9
Rank	Associate professor
Disciplines	Basics of Thermodynamics I Basics of Thermodynamics II Thermotechnics and thermal equipment
Scientific field	Energy Engineering
The description of the academic position	Associate Professor position 9 – Department of Energy, Environment and Agrotourism /Faculty of Engineering - associate professor position, including teaching activities in the subjects from the position put out to competition that are found in the curricula of the bachelor's and master's degree programs within the faculty. Also, the position includes, in addition to teaching activities, evaluation, consultation and tutoring activities in the subjects from the curriculum included in the position put out to competition and tutoring activities. The position is put out to competition for an indefinite period.
Academic duties	Weekly teaching activity consisting of: - 2 hours of course, 2 hours of laboratory and 1 hour of seminar in the discipline Basics of Thermodynamics I; - 2 hours of course and 4 hours of laboratory in the discipline Basics of Thermodynamics II; -2 hours of course and 1 hour of laboratory in the discipline of Thermotechnics and Thermal Equipment - 5 hours of evaluation activities; - 1 hour of tutoring activities. The position also includes scientific research activities in the field, according to the National Education Law no.199/2023, with subsequent amendments and completions, and the job description, which will be drawn up as an annex to the employment contract.
Employment salary	10103 lei
Publication date on site UCB	April 10 th 2025
Starting and final dates of the registration	April 10 th 2025 - August 28 th 2025
Date, day of the week and hour for the promotion exam	September 19 th 2025 , Friday, hour 9,00
Venue where the promotion exam	Faculty of Engineering, room HUB, Calea Eroilor, no. 30, 210135 Târgu-Jiu, Gorj.
The dates for the competition tests, including lectures, courses, etc.	September 19 th 2025
Date of exam results communication	September 19 th 2025
Starting and final dates for contesting the results	September 22 th 2025 - September 24 th 2025
Topics for preparing the promotion exam	For candidates from higher education, the fulfillment of the minimum national standards for occupying the position of associate professor is verified in accordance with Law no. 199/2023, the Higher Education Law, with subsequent amendments and completions, with Order MENCȘ no. 6129/20.12.2016, with the Competition Methodology for

occupying vacant teaching and research positions at the "Constantin Brâncuși" University of Târgu-Jiu
Candidates from outside the higher education system additionally give a public lecture of a didactic or scientific research nature, with the following topic:

I. Discipline: Basic of thermodynamics I

Topics

1. General. General notions of thermotechnics

Thermodynamic system. Thermodynamic equilibrium state. Condition sizes. The postulates of thermodynamics. Thermodynamic coefficients. Temperature. Pressure. Volume

2. The first law of thermodynamics

Internal energy. Mechanical work. Heat. Enthalpy. The principle of equivalence between heat and mechanical work. Formulation of the first principle. Mathematical expression of the first principle for open systems. Caloric equations of state.

3. The perfect gas

General. The laws of perfect gases. Specific heats. Gas mixtures. Dalton's Law. Fundamental thermodynamic processes

4. The second law of thermodynamics

The content of the second principle. Reversible and irreversible processes. Cyclical processes. The Carnot Cycle. Entropy. The equation of the second principle and the fundamental equation of thermodynamics for reversible processes. Entropic diagrams. Thermodynamic potentials. Exergy

5. The third principle of thermodynamics

The content of principle III. Consequences of Principle III

6. Real gases and vapors

The properties of real gases. The Van der Waals equation. Determination of state quantities of real gases. Vapours. The Clausius-Clapeyron equation. Lamination. The Joule-Thomson effect

7. Humid air

General. Diagram I-x for humid air. Simple transformations of humid air. Compound transformations of humid air. Conversions of humid air in drying plants. Air conversions in drying and air conditioning systems

8. Gas dynamics

General notions. Characteristic equations for the flow of gases and vapors. Nozzles. The speed of exit from the nozzles. Braking sizes.

Bibliography:

- 1.N. Drăghici, Termotehnică și mașini termice, Editura Didactică și Pedagogică, București, 1971
- 2.B. Popa, C. Vintilă, Termotehnică și mașini termice, Editura Didactică și Pedagogică, București, 1977
- 3.I.Vlădea, Tratat de termodinamică tehnică și transmiterea căldurii, Editura Didactică și Pedagogică, București 1974
4. Leonăchescu, N., Termotehnică, Editura Didactică și Pedagogică, București, 1981.

5.G.C. Moisil - Termodinamică, Editura Academiei, București, 1988

6.V. Paliță, Bazele termotehnicii, Editura "Curierul doljean", Craiova, 1993

7.V. Radcenco - Termodinamică generalizată, Editura Tehnică, București, 1994

II. Discipline: Basic of thermodynamics II

Topics:

1.Burning fuels

Fuels.Fuel burning. Combustion control

2.Piston compressor cycles

General. Theoretical compressor cycle. Technical compressor cycle. The step-by-step compressor. Compressor cooling.

3. Internal combustion engine cycles

Theoretical cycles of internal combustion engines. Real cycles of internal combustion engines

4. Steam turbine power plant cycles

The basic cycle of the steam turbine power plant. Methods of increasing the efficiency of the steam turbine force cycle. Combined methods of increasing yield. Methods of approximating the efficiency of the steam turbine power plant cycle to the efficiency of the Carnot cycle

5. Refrigeration cycles

Obtaining low temperatures. Cycle of mechanical refrigeration with air compression. Cycle of mechanical refrigeration system with vapor compression. Absorption refrigeration cycle.

6. Renewable energy sources

General.Solar energy. Wind. The energy of the water of the seas and oceans.

Bibliography:

1.N. Drăghici, Termotehnică și mașini termice, Editura Didactică și Pedagogică, București, 1971

2.B. Popa, C. Vintilă, Termotehnică și mașini termice, Editura Didactică și Pedagogică, București, 1977

3.I.Vlădea, Tratat de termodinamică tehnică și transmiterea căldurii, Editura Didactică și Pedagogică, București 1974

4. Leonăchescu, N., Termotehnică, Editura Didactică și Pedagogică, Bucuresti, 1981.

5.G.C. Moisil - Termodinamică, Editura Academiei, București, 1988

6.V. Paliță, Bazele termotehnicii, Editura "Curierul doljean", Craiova, 1993

7.V. Radcenco - Termodinamică generalizată, Editura Tehnică, București, 1994

III. Discipline: Thermotechnics and Thermal Equipment Topics:

1. General. General notions of thermotechnics

Thermodynamic system. Thermodynamic equilibrium state. Condition sizes. The postulates of thermodynamics.

Thermodynamic coefficients. Temperature. Pressure. Volume.

2. The first law of thermodynamics

Internal energy. Mechanical work. Heat. Enthalpy. The principle of equivalence between heat and mechanical work. Formulation of the first principle. Mathematical expression of the first principle for open systems. Caloric equations of state

3. The perfect gas

General. The laws of perfect gases. Specific heats. Gas mixtures. Dalton's Law. Fundamental thermodynamic processes

4. The second law of thermodynamics

The content of the second principle. Reversible and irreversible processes. Cyclical processes. The Carnot Cycle. Entropy. The equation of the second principle and the fundamental equation of thermodynamics for reversible processes. Entropic diagrams. Exergy

5. Real gases and vapors

The properties of real gases. The Van der Waals equation. Determination of state quantities of real gases. Vapours. The Clausius-Clapeyron equation. Lamination. The Joule-Thomson effect

6. Heat transfer

General. Thermal conduction. Heat transmission by convection. Heat transmission by radiation. Global heat exchange. Global heat exchange coefficient

7. Heat exchangers

General considerations. Classification. Heating agents. Basic equations of heat exchangers. Calculation of heat exchangers. Technical-economic calculation of heat exchangers. Criteria for determining the efficiency of comparison and choice of heat exchangers.

8. Steam generators

Outbreaks and the processes in outbreaks. Types of steam generators

9. Piston compressor cycles

General. Theoretical compressor cycle. Technical compressor cycle. The step-by-step compressor. Compressor cooling

10. Internal combustion engine cycles

Theoretical cycles of internal combustion engines. Real cycles of internal combustion engines

Bibliography:

1. N. Drăghici, Termotehnică și mașini termice, Editura Didactică și Pedagogică, București, 1971
2. B. Popa, C. Vintilă, Termotehnică și mașini termice, Editura Didactică și Pedagogică, București, 1977
3. I. Vlădea, Tratat de termodinamică tehnică și transmiterea căldurii, Editura Didactică și Pedagogică, București 1974
4. Leonăchescu, N., Termotehnică, Editura Didactică și Pedagogică, București, 1981
5. Dănescu Al., Termotehnică și mașini termice, Editura Didactică și Pedagogică, București, 1985

	6. Chiriac F., Mihaila C., Cartas V. si Bianchi A.-M.: Termotehnica (Transferul de caldura), I.C.B., 1989 7. V. Paliță, Bazele termotehnicii, Editura "Curierul doljean", Craiova, 1993
Description of the competition procedure	The competition is conducted in accordance with the Framework Methodology for the competition for filling vacant teaching and research positions in higher education, approved by Government Decree no. 1339/2023, with subsequent amendments and supplements, Higher Education Law no. 199/2023, with subsequent amendments and additions and the Competition Methodology for filling vacant teaching and research positions at the "Constantin Brâncuși" University of Târgu-Jiu, approved at the meeting of the Senate of the "Constantin Brâncuși" University of Târgu-Jiu on 13.03.2024. The competition file created by the candidate, together with the electronic support, which contains the scanned file, is submitted with a registration number to the address of the higher education institution specified on the competition website, directly or through postal or courier services that allow confirmation of receipt. The competition file is sent to the members of the competition committee starting from the closing date of the competition file submission process, but no later than 5 working days before the first test of the competition. The file, in the electronic format submitted by the candidates, is sent by the dean of each faculty that manages the competitions. The file in printed format, submitted by the candidate, will be sent to the chairman of the committee. The competition committee evaluates the candidate from the perspective of meeting the minimum standards specific to the position as well as verifying the following aspects: the relevance and impact of the candidate's scientific results, in relation to the field of disciplines of the position for which he/she is applying; the candidate's ability to guide students or young researchers; the candidate's teaching skills; the candidate's ability to transfer his/her knowledge and results to the economic or social environment or to popularize his/her own scientific results; the candidate's ability to work in a team and the efficiency of his/her scientific collaborations, depending on the specifics of the candidate's field; the candidate's ability to lead research and development projects; the candidate's professional experience in institutions other than the institution organizing the competition; the proposal for developing the teaching and research career. In order to occupy the position of associate professor, the following conditions must be met cumulatively: possession of a doctorate; meeting the minimum national standards for occupying teaching positions, specific to the teaching position of associate professor, approved by Order of the Minister of Education, according to art. 156 paragraph (1) of Law no. 199/2023 - Higher Education Law, as subsequently amended and supplemented; other specific criteria established by the Faculty Council, criteria that cannot fall below the level of

	national standards approved by Order of the Minister of Education, according to art. 156 paragraph (1) of Law no. 199/2023 - Higher Education Law, as subsequently amended and supplemented. In case of equal scores, the committee will take into account for the tie-breaking, in order, the following criteria: • Proposal for the development of the teaching and research career; • the candidate's contributions to increasing the prestige of UCB; • the candidate's contributions to the institutional development of UCB. The competition committee decides the ranking of the candidates and nominates the candidate who has achieved the best results. The chairman of the competition committee draws up a report on the competition, based on the evaluation reports written by each member of the competition committee and respecting the hierarchy of candidates decided by the committee. The report on the competition is signed by each member of the competition committee and by the chairman of the committee. The chairman of the competition committee submits the competition report approved by the committee's decision, the evaluation reports and the original file submitted by the candidate to the Dean of the Faculty. The report of the competition committee, after its validation by the faculty council, is submitted by the dean of the faculty to the senate of the higher education institution, for approval. The Legal Department gives its opinion on the legality of the competition. The university senate analyzes compliance with the procedures established by the higher education institution's own methodology and approves or not the report on the competition. The hierarchy of candidates established by the competition committee cannot be modified by the university senate. Appeals may be filed by a candidate for failure to comply with the standards, respectively the organization and conduct of the competition. The candidate may file an appeal within 3 working days from the communication of the result by the competition committee. The appeal is formulated in writing, registered at the UCB registry and resolved by the appeals committee within 48 hours of its registration, before the publication of the competition results. The contest can be submitted online to rectoratucb@gmail.com. The result of the contest is published on the contest website, within 2 working days from the end of the contest. The result of the contest is also uploaded on the electronic platform managed by the Ministry of Education.
List of documents	A1. Application for registration for the competition, signed by the candidate, which includes a declaration on his/her own responsibility regarding the veracity of the information presented in the file; A2. Proposal for the development of the candidate's career both from a teaching point of view and from a

scientific research point of view; the proposal is written by the candidate, and comprises a maximum of 10 pages;

A3. Curriculum vitae of the candidate – Europass model (in original, signed by the candidate on each page), which must include: information about the studies completed and the diplomas obtained; professional experience and relevant jobs; information about the research and development projects and grants that he/she has led as a project director or as a member, indicating for each funding source, the amount of funding and the main publications or patents resulting; information about awards or other elements of recognition of the candidate's scientific contributions; other relevant information;

A4. The candidate's list of works in printed format (in original, signed on each page) which will be structured as follows: a list of a maximum of 10 works considered by the candidate to be the most relevant to his/her professional achievements, which are also included in electronic format in the file and which can also be found in the other categories of works provided for in this article; doctoral thesis or theses; books and chapters in books; articles/studies, published in journals from the main international scientific flow; full-text publications, appearing in proceedings of the main international specialized conferences; research-development-innovation projects based on contract / grant that he/she led as project director or in which he/she worked as a member, indicating the source of funding for each; patents and other industrial property titles; other scientific works and contributions.

A5. Verification sheet of the fulfillment of the standards specific to the position, completed and signed by the candidate in printed format (in original, signed on each page).

A6. Documents relating to the possession of the doctoral degree. A true copy of the doctoral degree and, if the original doctoral degree is not recognized in Romania, a true copy of the certificate of its recognition or equivalence.

A7. Summary of the doctoral thesis in Romanian and in an internationally spoken language (maximum one page for each language);

A8. Other diplomas attesting the candidate's studies: copies of other diplomas attesting the candidate's studies: (baccalaureate diploma, bachelor's degree, master's degree/advanced studies, Certificate attesting psychopedagogical training) or, if the original diplomas are not recognized in Romania, their certificates of recognition or equivalence; copies of other diplomas attesting the candidate's studies. The copies are signed by the candidate for certification "consistent with the original";

A9. Transcripts, diploma supplements or school reports issued for each cycle of studies;

A10. Copy of the identity card certified by the candidate "according to the original" or, as the case may be, of the passport or another identity document drawn up for a purpose equivalent to the identity card or passport;

	A11. Copies certified by the candidates "according to the original" of the documents attesting to the change of name, if applicable (marriage certificate or proof of name change); A12. Declaration on the candidate's own responsibility that he/she is not in any situation of incompatibility provided for in Law no. 199/2023 - Higher Education Law, with subsequent amendments and completions and the Framework Methodology issued at national level; A13. Criminal record certificate; A14. Certificate of behavioral integrity; A15. Medical certificate proving that he/she is fit to carry out teaching activities, issued on a specific form adopted by joint order of the Minister of Education and the Minister of Health; A16. Medical certificate for the exercise of the teaching profession, issued in accordance with the provisions of the joint order of the Minister of Education and the Minister of Health; A17. Letters of recommendation, in accordance with art. 13 of GD 1339/2023: for the position of university lecturer, three letters of recommendation from personalities in the respective field, from the country or abroad, external to the higher education institution whose position is being advertised, who have agreed to draw up letters of recommendation regarding the candidate's professional qualities. A18.- A19. Declaration of assumption of responsibility, in original (holograph) signed by the candidate. The declaration must affirm the correctness of the data in the file and the fact that they refer to their own activities and achievements, otherwise the candidate will bear the consequences of false declarations, in accordance with the legislation. A20. A folder containing a maximum of ten of the candidate's most significant works, in scanned form on electronic media (CD/DVD), and books and book chapters will be submitted in physical format. In addition, the electronic media will also include the candidate's list of works in Word format. A21. The document for payment of the competition registration fee. The file will include a cover page and a table of contents. A CD/DVD, or other electronic format, with its entire content scanned, including the folder with the 10 significant works, is also attached to the competition file for transmission to the competition committee. A22. Other documents according to the Competition Methodology for filling vacant teaching and research positions at the "Constantin Brâncuși" University of Târgu-Jiu.
Address where the competition file will be sent	"Constantin Brâncuși" University of Târgu-Jiu, Tineretului Street, no. 4, Târgu-Jiu, Gorj
Commission	

Methodology	Uploading doc, docx or PDF files. The maximum supported file size is 10MB.
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Dean,

Prof. PhD.Chemistry, Popa Roxana-Gabriela

Department Director,

Prof. PhD.Eng. Racocceanu Cristinel