



**Information about the career promotion exam for the position of
„ Associate Professor”
Department of General Engineering Sciences
entry no13 in the job title list
Faculty of Naval Electromechanics
Constanta Maritime University**

a.) Description of position

Full-time entry 13 in the Department of General Engineering Sciences, Faculty of Naval Electromechanics, Constanta Maritime University

Academic Subjects in the curricula:

- Materials technology in offshore industry
- Tehnical drawing and infographics
- Material science and engineering

b) Tasks / Activities associated with the role

Teaching Load: Related duties /activities

| No. | Type of Activity | No.of conventional hours |
|-----|--|--------------------------|
| 1. | Teaching Activities | 4 h /week |
| 2. | Supervision of Seminar, Labs, and Projects | 4 h /week |
| 3. | Guidance for the elaboration of the Bachelor thesis | 4 h /week |
| 4. | Guidance for the elaboration of the Master thesis | 2 h /week |
| 5. | Guidance for the elaboration of PhD thesis | — |
| 6. | Other practical teaching and research activities included in the curricula | 2 h /week |
| 7. | Conducting educational, artistic or sporting activities | — |
| 8. | Assessment Activities | 2 h /week |
| 9. | Tutoring, counseling, guidance of student scientific groups, of students within the European Credit Transfer and Accumulation System | 2 h/week |
| 10. | Participation in education-oriented boards and commission | 2 h/week |
| 11. | Self-Study | 8 h /week |

Research Load

| No. | Type of Activity | No. of conventional hours |
|-----|---------------------|---------------------------|
| 1. | Research Activities | 10 h /week |

c.) Minimum wage for classification

| No. | Position | Years of academic labor | Wage Grid for teaching didactic personnel - April, 2023 | | | | | |
|-----|---------------------|-------------------------|---|------|------|------|------|------|
| | | | Base wage - lei | | | | | |
| | | | Gradation | | | | | |
| | | | 0 | 1 | 2 | 3 | 4 | 5 |
| 1 | Associate Professor | peste 40 ani | 7546 | 8112 | 8518 | 8944 | 9168 | 9398 |
| | | 35-40 ani | 7546 | 8112 | 8518 | 8944 | 9168 | 9398 |
| | | 30-35 ani | 7546 | 8112 | 8518 | 8944 | 9168 | 9398 |
| | | 25-30 ani | 7546 | 8112 | 8518 | 8944 | 9168 | 9398 |
| | | 20-25 ani | 6580 | 7074 | 7428 | 7800 | 7995 | 8195 |
| | | 15-20 ani | 5517 | 5931 | 6228 | 6540 | 6704 | 6872 |
| | | 10-15 ani | 5101 | 5484 | 5759 | 6047 | 6199 | 6354 |
| | | 5-10 ani | 4826 | 5188 | 5448 | 5721 | 5865 | 6012 |
| | 3-5 ani | 4508 | 4847 | 5090 | 5345 | 5479 | 5616 | |

d.) Calendar of the career promotion exam

- The application period shall run 45 days from obtaining the approval from the Ministry of Education (April 25th 2023 to June 8th 2023)
- The career promotion exam will take place within 45 days after the application period (from June 28th 2023 to July 14th 2023).
- The time and place of the compulsory career promotion exam represented by the public lecture will be announced on the web page of the career promotion exam at least 5 working days before the exam

e.) Detailed syllabus and tutorial

Materials technology in offshore industry

| No. | Content |
|-----|--|
| 1. | Metallic materials used in offshore oil and gas industry |
| 2. | Degradation mechanisms of steels. Corrosion of steel |
| 3. | Corrosion protection methods used in the offshore industry |
| 4. | Modern materials used in the offshore industry |



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| | |
|----|---|
| 5. | Welding.Welding technologies |
| 6. | Coating systems |
| 7. | Advance paint application technology. |
| 8. | ISO standards used in offshore oil and gas industry |

Bibliography

| No. | Authors | Title |
|-----|--|---|
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| 2. | William C. Lyons | Standard Handbook of petroleum & natural gas engineering, Gulf Publishing company, Houston Texas, ISBN 0-88415-643-5, (vol.2), 1996 |
| 3. | Subrata K. Chakrabarti | Handbook of offshore engineering, Elsevier, ISBN-13: 978-0-08-044568-7 (vol 1), 2005 |
| 4. | Subrata K. Chakrabarti | Handbook of offshore engineering, Elsevier, ISBN-13: 978-0-08-044569-4 (vol 2), 2006 |
| 5. | C.W.Peterson | Requirements for Corrosion Resistant Alloy Production Tubing, SPE 19277. Paper presented at 64th Annual Fall Technical Conference, 8-11 October, S.Antonio, Texas, 1992; |
| 6. | Sergio Cerruti | An overview of corrosion resistant alloy steel selection and requirements for oil and gas industry, 2008; |
| 7. | Bruce D. Craig | Selection guidelines for corrosion resistant alloys in the oil and gas industry, Nickel Institute Technical Series No 10 073, 2011; |
| 8. | Charles Smith, Tom Siewert, Brajendra Mishra, David Olson, and Angelique Lassiegne | Coatings for Corrosion Protection: Offshore Oil and Gas Operation Facilities, Marine Pipeline and Ship Structures, NIST, 2004; |
| 9. | | Review of corrosion management for offshore oil and gas processing Capcis Limited Bainbridge House Granby Row, United Kingdom, ISBN 0 7176 2096 4, 2001 |
| 10. | | The welding handbook for maritime welders, Wilhelmsen Shipe Services, 11th edition, Kobe Steel Ltd, The ABC's of arc welding and inspection, 2011; |
| 11. | *** | BS EN 10225:2009, Weldable structural steels for fixed offshore structures — Technical delivery conditions |
| 12. | *** | ISO / TC67 – Material equipment and offshore structures for petroleum, petrochemical and natural gas industries; |
| 13. | *** | NORSOK M-001, Materials selection ISO TS 29001:2007 (Identical), Petroleum, petrochemical and natural gas industries—Sector specific requirements—Requirements for product and service supply |

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| | | organizations |
| 14. | *** | Offshore Standard DNV-OS-B101 Metallic materials |
| 15. | *** | Offshore Standard DNV-OS-C401 Fabrication and testing of offshore structures |
| 16. | *** | ANSI/AWS D1.1 Structural Welding Code – Steel |
| 17. | *** | ASTM G48 Standard Test Methods for Pitting and Crevice Corrosion Resistance of Stainless Steels and Related Alloys by Use of Ferric Chloride Solution |
| 18. | *** | ISO 8501-1 Preparation of steel substrates before application of paints and related products – Visual assessment of surface cleanliness - Part 1: Rust grades and preparation grades of uncoated steel substrates and of steel substrates after overall removal of previous coatings |
| 19. | *** | ISO 9606 Approval testing of welders - Fusion welding |
| 20. | *** | ISO 1461 Metallic coatings – Hot-dip galvanised coating on fabricated ferrous products – Requirements |
| 21. | *** | ISO 2814 Paints and varnishes – Comparison of contrast ratio (hiding power) of paint of the same type and colour |
| 22. | *** | ISO 4624 Paints and varnishes – Pull-off test for adhesion |
| 23. | *** | ISO 4628-6 Paints and varnishes – Evaluation of degradation of paint coatings – Designation of intensity, quantity and size of common types of defect – Part 6: Rating of degree of chalking by tape method |
| 24. | *** | ISO 14919 Thermal spraying — Wires, rods and cords for flame and arc spraying – Classification – Technical supply conditions |
| 25. | *** | ISO15156 - Petroleum and Natural Gas Industries – Materials for use in H ₂ S-containing Environments in Oil and Gas Production |
| 26. | *** | ISO 19840 Paints and varnishes – Corrosion protection of steel structures by protective paint systems – Measurement of, and acceptance criteria for, the thickness of dry film on rough surfaces |

Tehnicul drawing and infographics

| No. | Content |
|-----|---|
| 1. | General ISO recommendations in engineering graphics. Description of the relationship between orthogonal projection and descriptive geometry. Layout of projections in the Technical Drawing |
| 2. | Making Sketches and scale drawing. Representation of views. General rules for representing views. |
| 3. | Representation of sections 3.1. Classification of sections. |



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| | 3.2. Rules for representing the sectioning route and sections, 3.3. Representation of ruptures 3.4. Rules for representing breaks. 3.5. Hatching in the technical drawing |
| 4. | Representation and dimensioning of threads. Representation and dimensioning of flanges |
| 5. | Dimensional description of parts: 5.1. Scale drawing, 5.2. Dimensions techniques |
| 6. | Threaded removable assemblies. |
| 7. | Non-removable assemblies by welding |
| 8. | AutoCAD interface 8.1. Launching the AutoCAD program. 8.2. Entering commands 8.3. Creating a template file 8.4. Setting up a drawing. Establishing the limits of the drawing. Establishing layers. |
| 9. | Absolute and relative coordinates: WCS and UCS. Choosing the line type. Choosing the width of the line. Erasing of objects. |
| 10. | AutoCAD methods 10.1. Multiple methods of selection of the objects 10.2. Method for object snap (OSNAP) |
| 11. | Commands for drawing in AutoCAD 11.1. Drawing circles (CIRCLE) 11.2. Drawing arcs (ARC) 11.3. Drawing rectangles (RECTANG) 11.4. Drawing polygons (POLYGON -POL) 11.5. Drawing ellipses (ELLIPSE – EL) 11.6. Drawing a line (Xline – XL) 11.7. Drawing a ray (Ray) 11.8. Drawing polylines (Pline) |

Bibliography

| No. | Authors | Title |
|-----|------------------------------|--|
| 1. | Bărhălescu M. | Desen Tehnic și Infografică. Editura Nautica, ISBN 978-606-681-171-2, 208 pagini, 2023 |
| 2. | Bărhălescu, M., Zidaru, N | Geometrie descriptiva și desen tehnic, vol I, Ed. Printech, București, ISBN 973-718-089-5, 136 pagini 2004 |
| 3. | Raicu, A | Grafică asistată de calculator/ Computer aided design, Editura Nautica, Constanța, ISBN 978-606-681-008-1, 176 pagini 2013 |
| 4. | Vasilescu, E., ș.a. | Desen tehnic industrial. Elemente de proiectare, Editura tehnică, București, ISBN 973-31-0679-8, 316 pagini, 1995 |
| 5. | Țălu, Ș., ș.a. | Reprezentări axonometrice cu aplicații în tehnică, Editura Mega, Cluj-Napoca, 2007; |
| 6. | *** | https://magazin.asro.ro/ro/catalog-standarde |

Material science and engineering

| No. | Content |
|-----|--|
| 1. | Introduction to Materials Science and Engineering. 1.1. Composition - structure - processing - properties – uses correlation. 1.2. Materials for technical use: metals, ceramics, polymers, composites - general presentation. |
| 2. | Crystalline structure of metals 2.1. Crystal systems. 2.2. Crystalline networks of metals. 2.3. Real structure of metals. 2.4. Point defects, dislocations-linear defects, dislocation properties |
| 3. | Physico-chemical constitution of metals 3.1. Solid solutions of substitution. Interstitial solid solutions, intermetallic compounds. Metallographic constituents. |
| 4. | Crystallization of metals 4.1. Elementary crystallography. Degree of thermal undercooling. 4.2. Phase transformation at solidification. 4.3. Allotropy (polymorphism) of metals 4.4. Solidification mechanisms. |
| 5. | Principles and basic notions about thermodynamic equilibrium phase diagram 5.1. Phase rule and equilibrium. 5.2. Classification of the alloy systems' thermodynamic equilibrium phase diagrams 5.3. The equilibrium phase diagram of binary alloy systems with total solubility of the components in both liquid and solid form. 5.4. Equilibrium phase diagram of binary alloy systems with total solubility in liquid form and insoluble in solid form. 5.5. Equilibrium phase diagrams of binary alloy systems with total solubility in liquid form and partial solubility in solid form with eutectic transformation. 5.6. Equilibrium phase diagrams of binary alloy systems with partial solubility in solid form with peritectic transformation. 5.7. Equilibrium phase diagram of binary alloy systems insoluble in both liquid and solid form. |
| 6. | Fe-Fe ₃ C alloy systems 6.1. Iron.Allotropic points.Properties; 6.2. The Iron-Iron Carbide phase diagram; 6.3. The influence of carbon over the allotropic points of iron; 6.4. Phases and constituents in the Fe-Fe ₃ C system; Transformation types; 6.5. Technical carbon steel. Classification and standardisation of carbon steel. 6.6. Alloying elements in carbon steels and their influence over structure and properties; |
| 7. | Gray cast iron 7.1.Equilibrium phase diagram of stable Fe-Cgrafit system. Phases and |

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| | <p>constituents; 7.2. The formation of gray cast irons; Chemical composition of gray cast irons; Structure of gray cast irons; 7.3. The influence of grafit on the properties of gray cast irons; Technological properties; Gray cast irons for casting;</p> |
| 8. | <p>Ceramic materials-structure, properties and way of obtaining 8.1. Ceramic material types 8.2. Specific aspects of environment at the production of glass 8.3. The structure of ceramic materials 8.4. Properties of ceramic materials 8.5. Use of ceramic materials</p> |
| 9. | <p>Plastic materials. Properties, characteristics and uses.</p> |

Bibliography

| No. | Authors | Title |
|-----|---|---|
| 1. | Bărhălescu M. | Știința Materialelor, Editura Nautica, ISBN 978-606-681-174-3, 165 pagini, 2023 |
| 2. | Duluceanu, C., Băncescu, N | Introducere în știința materialelor metalice, Editura PIM, Iași, 2013 |
| 3. | David G. Rethwisch and William Callister | Materials Science and Engineering, ISBN: 978-1-119-40549-8, 2018 |
| 4. | Marinca, T. F | Elemente de Metalurgie Fizică, Editura UTPRESS Cluj Napoca, 2019 |

f.) Description of the career promotion exam procedure

In order to enroll for the promotion exam for a teaching and research position, the candidate prepares a dossier containing at least the following documents:

- Application form, signed by the candidate, including an affidavit about the veracity of the information presented in the file;
- Proposal to develop the candidate's academic career in terms of teaching, in case of teaching positions and also in terms of scientific research; the proposal shall be made by the candidate, it includes more than 10 pages.
- Curriculum vitae of the candidate, printed and electronically
- List of candidate's works, in printed and electronic form;
- A sheet verifying the fulfillment of university standards of presentation in the competition, whose standard format is required by its own methodology. The verified sheet is completed and signed by the candidate;
- Documents which relate to the degree of doctor: legalized copy of the diploma of doctor and, if the original doctor's degree is not recognized in Romania, certificate of recognition or equivalence thereof;
- Summary of the thesis in Romanian and a foreign language, or, where applicable, habilitation thesis on no more than one page for each language;
- The candidate's affidavit which indicates the incompatibility situations stipulated by Law no. 1/2011 in which they would be in, in the case of passing the exam, or the lack of such situations of incompatibility.
- The candidate's affidavit which states that they have not been disciplinary sanctioned in the last three years.
- Proof on obtaining the "very good" grade in the last three years;
- Copies of other diplomas demonstrating the candidate's studies



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- l) Copy of identity card or, if the candidate does not have an identity card, passport or other identity document issued in an equivalent identity purpose;
- m) If the candidate has changed his name, copies of documents certifying the name change - marriage certificate or proof of name change;
- n) Maximum 10 publications, patents and other papers of the candidate, in electronic format, selected by him and considered to be most relevant for their professional achievements.

Curriculum vitae of the candidate must include:

- a) information about the studies and diplomas obtained;
- b) information about professional experience and previously occupied relevant jobs;
- c) information about research and development projects which he led as project manager and grants obtained, if there are such projects or grants, indicating for each funding source, funding amount and the main resulting publications and patents;
- d) information about the awards or other recognition of scientific contributions of the candidate.

Full list of papers of the candidate will be as follows:

- a) List of more than 10 papers of the candidate to be most relevant for his professional achievements, which are included in the electronical file and can be found in other types of works under this article. For the post of professor, works list will specify which of the papers presented are carried out after obtaining the certificate of entitlement;
- b) The doctoral thesis or theses;
- c) Patents and other industrial property titles;
- d) Books and chapters in books;
- e) Articles/studies extensively published in international scientific journals in the main stream;
- f) In extenso publication, the main works published in international specialized conferences;
- g) Other works and scientific contributions, as appropriate, in the field of artistic creation.

Candidate's professional competence is assessed by the exam commission based on the candidate's exam dossier and, additionally, by one or more examination tests, including lectures, courses and or laboratory and seminary activities, or similar others, according to the university's own methodology: a) for all posts for indefinite period, a test is represented by a public lecture at least 45 minutes in which the candidate presents the most significant previous professional accomplishments and the academic career development plan. A mandatory session of questions from the committee and from the assistance is included. b) The University announces on its website the contest date, time and place at least 5 working days before the exam test.

Stages of the career promotion exam:

Stage I: The assessment of the candidate's dossier.

Stage II: A Public Lecture of at least 45 minutes in which the candidate presents the most significant previous professional results and the university career development plan. This test must also include a question and answer session by the committee and the public.



g.) The complete list of documents that candidates must include in the career promotion application dossier

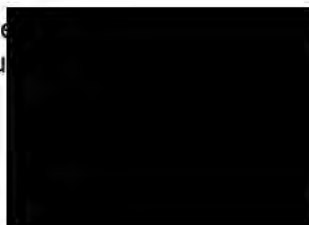
- a) Application form, signed by the candidate, including an affidavit about the veracity of the information presented in the file;
- b) Proposal to develop the candidate's academic career in terms of teaching, in case of teaching positions and also in terms of scientific research; the proposal shall be made by the candidate, it includes no more than 10 pages and is one of the main criteria of selecting candidates.
- c) Curriculum vitae of the candidate, in printed and electronic form;
- d) List of candidate's works, in printed and electronic form;
- e) A sheet verifying the fulfillment of university standards of presentation in the competition, whose standard format is required by its own methodology. The verified sheet is completed and signed by the candidate;
- f) Documents which relate to the degree of doctor: legalized copy of the diploma of doctor and, if the original doctor's degree is not recognized in Romania, certificate of recognition or equivalence thereof;
- g) Summary of the thesis in Romanian and a foreign language, or, where applicable, habilitation thesis on no more than one page for each language;
- h) The candidate's affidavit indicating incompatibility situations stipulated by Law no. 1/2011 as they are for winning the competition or lack of such situations of incompatibility;
- i) Copies of other diplomas demonstrating the candidate's studies;
- j) Copy of identity card or, if the candidate does not have an identity card, passport or other identity document issued in an equivalent identity purpose;
- k) If the candidate has changed his name, copies of documents certifying the name change - marriage certificate or proof of name change;
- l) Maximum 10 publications, patents and other papers of the candidate, in electronic format, selected by him and considered to be most relevant for their professional achievements.

If one or more publications are not available in electronic format, the candidate will submit a copy of the book/monograph of which he is the author, the website of the conference where the paper was presented, ISSN, Proceeding, etc., or copies scanned in pdf format;

m) The file once submitted by the candidate can no longer undergo additions, changes or corrections.

h.) The application for the competition will be submitted to the address enclosed in the header.

Dean of Naval Ele
Assoc. Prof. Liviu



Head of depa
Assoc. Prof. Alexand

