ENERGY, NUCLEAR AND ENVIRONMENTAL CONTROL ENGINEERING

Coordinator
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Website

Duration
3 years

Academic year
2013/2014

Programme start date
01/01/2014

Programme held in
Italian and English

Main Department
Department of Industrial Engineering

Partner Institutions
Agenzia nazionale per le nuove tecnologie, l'energia e lo sviluppo economico sostenibile (ENEA)
Fondazione Alma Mater (FAM)

Research topics
- Neutron, particle and radiation transport
- Radiation protection
- Fluid mechanics and microfluidics
- Heat transfer and the theory of convection
- Thermohydraulic two-phase flows
- Thermodynamics and civil technical systems
- Applied acoustics and lighting
- Thermophysics of buildings
- Nuclear plants

Requirements and admission procedures

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<th>Requirements</th>
<th>Admission procedures</th>
<th>Notes on admission</th>
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<td>An Italian university degree (laurea specialistica/magistrale - 3+2 years) or pre-reform degree (vocchio ordinamento - 4 years) or an equivalent degree obtained abroad. Also applicants whose degree will be awarded no later than December 31, 2013 can participate to the selection procedures.</td>
<td>Written examination Assessment of qualifications Oral examination</td>
<td>For applicants residing abroad, the oral examination can be done remotely through video-conference based on the IP protocol (such as through Skype with webcam). In this case, at the time of application for admission, applicants should indicate the choice of this mode for the oral examination and indicate a valid address/contact. The request must be authorized by the Admission Board upon verification of the conditions needed to ensure the proper conduct of the test (via a trustee, who will verify the applicant's identity and will be staying on the applicant's site during the examination). The applicant should contact the Admission Board at the Skype contact dottorato.energetica and agree a timetable to carry out of the oral examination, on days specified for the oral examination. The applicant must ensure his/her availability to the address indicated in the application beginning at the agreed hour and for the next 5 hours. In case the applicant is not found for 2 times by members of the Admission Board, he/she will be considered as definitely not registered for the oral examination.</td>
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Mandatory documents to be enclosed with the online application (failure to comply with such requirements will result in the exclusion from the competition)

1. CV
2. copy of Bachelor's and Master's degree, list of exams taken with marks and the score in the final exam (in Italian or English)
3. only for those who do not hold a Master's degree when submitting the application: copy of the exams taken with marks
   - for degrees obtained in Italian Universities: upload a SIGNED self-declaration;
   - for degrees obtained in non-EU countries: upload the degree certificate issued by the relevant University;
   - for degrees obtained in EU countries (except Italy): you can either upload a SIGNED self-declaration or the degree certificate issued by the relevant University, translated in Italian or English;
   - all documents must contain the following information: personal data, name of the University, degree name, final score, transcript (see art. 2 of the call).
4. Research project that the applicant would conduct during the PhD programme (maximum 1,000 words in Italian or English), that will be discussed during the oral examination (the research project will not be considered in the assessment of qualifications); the research project must deal with one of the research topics of the PhD Programme. Such a project will not necessarily be the subject of the successful applicant's doctoral studies.

Other documents to be enclosed, if available
- Scientific papers/proceedings of national and international conferences
- Documented research or study activities abroad (for longer than 3 months)

Agenda

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<th>Description</th>
<th>When</th>
<th>Where</th>
<th>Time</th>
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<tr>
<td>Written examination</td>
<td>21/10/2013</td>
<td>Department of Industrial Engineering - Fisica Tecnica - Viale Risorgimento 2</td>
<td>2 p.m.</td>
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<tr>
<td>Oral examination</td>
<td>28/10/2013</td>
<td>Department of Industrial Engineering - Fisica Tecnica - Viale Risorgimento 2</td>
<td>2 p.m.</td>
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Assessment criteria

Total score: 100/100

1. Written examination
   - minimum score required for the admission to the assessment of qualifications and to the oral examination: 30
   - maximum score: 50
   The aim of written examination is to test the applicant’s basic and technical knowledge of physics and mathematics by conducting exercises on topics related to calculus, elementary mechanics, wave propagation, heat transfer, fluid mechanics.

2. Assessment of qualifications
   - maximum score: 20
   The assessment of qualifications will be carried out only for those who have obtained the minimum score in the written examination.
   Score is assigned as follows:
   - Evaluation of the average mark of the university exams: max 10 points
   - Evaluation of the speed in obtaining the final degree: max 2 points
   - Evaluation of the final degree score: max 3 points
   - Publications: max 2 points
   - Research or study activities abroad (more than three months): max 2 points
   - Other qualifications specified in the CV: max 1 point

3. Oral examination
   - maximum score: 30
   The oral exam will focus on the explanation and discussion of the applicant’s research project.
   The oral examination will assess the applicant’s aptitude for scientific research, as well as her/his knowledge about the research topics of the PhD Programme.

Only those obtaining a total mark (written examination + assessment of qualifications + oral examination) equal to or greater than 60/100 will be listed in the final ranking.

The results of the selection procedures will be posted by 23/10/2013 at the Department of Industrial Engineering and will be published on the website http://studenti.unibo.it, accessible through username and password of the University of Bologna provided at first registration (by selecting: sintesi delle richieste in corso → vedi dettaglio → risultati prove).

Applicants will not be informed about the outcome of the selection procedures.

The final ranking will be published on the website http://studenti.unibo.it. Information regarding the publication of the final ranking will be available on www.unibo.it/Dottorati/Bandi29.

Language requirements

During the oral examination, it will be assessed the knowledge of the following foreign language: English.

The admission procedures can be carried out in Italian or English, depending on the applicant’s choice.

For foreign applicants the knowledge of Italian is not required.

Positions and scholarships

Total number of positions: 8, of which:
- 2 positions with scholarship granted by the University of Bologna (one scholarship is made available with funds provided in part by the Department of Industrial Engineering)
- 1 position with scholarship “Fondo Giovani 2012” granted by MIUR, committed to Scope of Investigation 3 “Novel applications of biomedical industry”
- 1 position with scholarship granted by private institutions (Fondazione Alma Mater), committed to the following research topic: “Thermohydraulics studies of the experimental facilities of the Jules Horowitz Reactor – JHFR and in particular of the LORELEI device”
- 4 positions without scholarship

Extra-quota positions: 8