# ELECTRICAL ENGINEERING

**Coordinator**
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**Website**
http://www.die.ing.unibo.it/dottorato_it/index.htm

**Duration**
3 years

**Academic year**
2013/2014

**Programme start date**
01/01/2014

**Programme held in**
Italian

## Main Department
Department of Electrical, Electronic, and Information Engineering «Guglielmo Marconi»

## Partner Institutions
- CESI SpA
- Electricité de France (EdF)
- ALTA SpA
- ESA – European Space Agency
- ENEA Centro di Ricerca di Frascati
- ENEA - Ricerca sul Sistema Elettrico S.p.A.
- Columbus Superconductors SpA
- Edison - Centro Ricerche di Trofarello
- Edison Energie Speciali Spa
- Ferrari GS
- Università di Varsavia
- Universitat der Bundeswemer, Monaco, D
- Politecnico Federale di Losanna EPFL
- SUPELEC, Gif-sur-Ivette
- Universität Pontificia Comillas
- CIESTAV – Università di Guadalajara
- Universidad Nacional de Colombia, Bogotà
- TIT – Tokyo Institute of Technology - Department of Energy Sciences
- IVTAN – Institute for Hig Temperatures of the Academy of Sciences of Russia
- TUE – Technische Universiteit Eindhoven - Faculteit Technische Natuurkunde
- Aalborg University (Danimarca) - Department of Energy Technology, Green Power Lab., Flexible Drive System Lab
- Université de Picardie Jules Verne (Amiens – Francia) - Centre de Robotique, d'Electrotechnique et d'Automatique
- The University of Nottingham (UK) - School of Electrical and Electronic Engineering, Power Electronics Machines and Control (PEMC) Laboratory
- Warsaw University of Technology (Polonia) - Institute of Control and Industrial Electronics
- The University of Tokyo
- University of Twente
- University of Missouri-Rolla, Missouri, USA - EMC Laboratory
- National Institute of Standards and Technology, Boulder, Colorado, USA - Boulder Laboratories
- Worcester Polytechnic Institute
- University of South Carolina - Department of Electrical Engineering
- The University of Nottingham, United Kingdom - George Green Institute for Electromagnetics Research
- Technical University of Cluj-Napoca - Faculty of Electrical Engineering – SEMET Group
- Liverpool John Moores University - Faculty of Technology and Environment, School of Engineering
- Wright State University, Dayton, OH - Department of Mechanical and Materials Engineering

## Research topics
- Electric circuits
- Power Electronic Circuits
- Electromagnetic Compatibility
- Electrical Machines and Drives
- Applied Magnetohydrodynamic
- Measurements and Electric and Electronic Instrumentation
- Design Optimization of Electromagnetic Devices
- Electric Systems for Energy
- Applied Superconductivity
- Electrical Technologies

## Requirements and admission procedures

<table>
<thead>
<tr>
<th>Requirements</th>
<th>Admission procedures</th>
<th>Notes on admission</th>
</tr>
</thead>
<tbody>
<tr>
<td>An Italian university degree (laurea specialistica/ magistrale - 3+2 years) or pre-reform degree (vecchio 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>Evaluation of qualifications and research project Oral examination</td>
<td>For applicants residing abroad, the oral examination can be done remotely through videoconference 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 Skype contact and e-mail address. The request must be authorized by the Admission Board upon verification of the conditions needed to ensure the proper conduct of the test (including check of the applicant's identity). The Admission Board will contact the applicants at the e-mail address specified in order to agree a timetable to carry out 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 4 hours. In case the applicant is not found for 3 times by members of the Admission Board, he/she will be considered as definitely not registered with 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 grades and final mark (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 grades

For documents listed at points 2. and 3., please note that:
- 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); 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 international conferences in English
- Copy of graduation thesis
- Reference letters, certifying the applicant's aptitude and interest for scientific research (max 2) (to be sent through the procedure available at the URL http://studenti.unibo.it)
- Any other relevant document (scholarships, awards, courses attendance, participation in Erasmus or other exchange programs, etc.)

Agenda

<table>
<thead>
<tr>
<th>Description</th>
<th>When</th>
<th>Where</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Evaluation of qualifications and research project</td>
<td>14/10/2013</td>
<td>Department of Electrical, Electronic, and Information Engineering «Guglielmo Marconi» - Library (applicant presence not requested)</td>
<td></td>
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<tr>
<td>Oral examination</td>
<td>21/10/2013</td>
<td>Department of Electrical, Electronic, and Information Engineering «Guglielmo Marconi» - Library</td>
<td>9:30 a.m.</td>
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</tbody>
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Assessment Criteria

Total score: 100/100

1. Evaluation of qualifications and research project
   - minimum score required for the admission to the oral examination: 30
   - maximum score: 50
   Score is assigned as follows:
   - evaluation of degree mark (for applicants who possess a university degree at the time of submission of the application) or evaluation of the university exams taken with grades (for applicants who do not possess a university degree at the time of submission): max 10 points
   - research project: max 20 points
   - graduation thesis: max 10 points
   - other qualifications: max 10 points
   The results of the evaluation of qualifications and research project will be posted on the bulletin board of the Department and on the site http://studenti.unibo.it, restricted access by University credentials (by selecting: sintesi delle richieste in corso → vedi dettaglio → risultati prova).

2. Oral examination
   - minimum score required in order to be listed in the final ranking: 30
   - maximum score: 50
   The oral examination will assess the applicant's aptitude for scientific research. During the oral examination the applicants will be asked to explain and discuss the research project.
   The results of the oral examination will be posted on the bulletin board of the Department and on the site http://studenti.unibo.it (by selecting: sintesi delle richieste in corso → vedi dettaglio → risultati prova).
   The final ranking with details of winners will be published on the site http://studenti.unibo.it, restricted access by University credentials. Any information concerning the publication of the final ranking will be available on www.unibo.it/Dottorati/Bandi29.
   The Admission Board will not send any communication to the applicants about the outcome of the tests. It is the responsibility of the applicants to be informed on the outcome (see art. 6 of the call).

Language requirements

During the oral examination 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: 12, of which:
- 3 positions with scholarship granted by Università of Bologna (one scholarship is made available with funds provided partly by the Department of Electrical, Electronic, and Information Engineering «Guglielmo Marconi»)
- 1 position with scholarship "Fondo Giovani year 2012" granted by MIUR, committed to Scope of Investigation 5 “Shipbuilding, aircraft and helicopters with high ability to penetrate foreign markets”.
- 1 position with scholarship "Fondo Giovani year 2009" granted by MIUR (the scholarship is made available with funds provided in part by the Department of Electrical, Electronic, and Information Engineering «Guglielmo Marconi»), committed to Scope of Investigation 5 “Strengthening and development of automotive industry, including motorcycle, with low fuel consumption and low environmental impact motors”.
- 7 positions without scholarship