European Doctoral Training Support in Micro/Nano-electronics-2

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Call 1 for Courses

Deliverable D1.3

Work Package 1 – EURO-DOTS platform operation and course portfolio management

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Abstract :

In this Deliverable the 1st Call for Courses within EURO-DOTS-2 is provided. At the Consortium Meeting in Stockholm (17-18 June 2013) it was decided to launch this Call after the Summer vacation in order to avoid that this call would remain unnoticed during this period.

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1. Introduction

This document provides the 1st Call for Courses to be launched early October 2013. Although at present we already have about 15 tentative courses for 2014, we definitely want to encourage/stimulate more colleagues in Europe to organize and open their courses to PhD students in Europe. The feedback from the more than 200 students who have benefitted so far from one of the EURO-DOTS scholarships – please read their testimonials on the EURO-DOTS website www.eurodots.org/Testimonials.asp - is extremely positive and these students strongly urge top universities in Europe to provide such courses, building on the experience of the organizing groups. Also the course providers have expressed their appreciation for this EURO-DOTS initiative and mission and their testimonials will be as well available soon on the EURO-DOTS website. We therefore launch this Call in which the consortium also identifies themes/topics considered and indicated as of high importance by industry and the academic community and that have not been the subject of one of the **92** EURO-DOTS labeled courses of 2011-2013, treating **56** different topics/themes. Of course, themes/topics that have already been covered before in one of the EURO-DOTS courses remain welcome and re-organized courses dealing with these themes/topics can moreover certainly benefit from the feedback and recommendation by students in order to make them even more successful and responsive to the expectations of our PhD students. This is also mentioned in the Call. But the emphasis is now put on so far untreated topics/themes. This shortlist was made starting from the list that was included in Deliverable D1.2 (Report 1 on the identification of Needs from Industry, 30 June 2013). We however also provide on the EURO-DOTS website the table of all topics/themes that have already been covered in one of the above mentioned 92 courses and refer to this in the Call, in order to help potential providers in the selection of their topic and provide examples of the content of previous courses.

2. List of Needs

We once again refer to this list of Needs as summarized in Deliverable D1.2 and which is provided in the Table hereafter in alphabetical order. The topics which are untreated so far by EURO-DOTS courses are indicated in Bold. From these topics a shortlist of 11 themes was made by the Steering Committee and these are the ones included in the 1st Call of EURO-DOTS-2.

Topics for consideration in EURO-DOTS Courses 2013-2014
Advanced microprocessor architectures
Advanced sensors and smart sensor systems
Advanced signal processing for electronic systems
Basic elements of biology
Basic high-voltage IC design techniques
Biomedical electronics & biosensors
Broad knowledge of electronics (not just the subject of the thesis)
Characterization techniques: RBS, SIMS, TEM, …
CMOS operation, CMOS scaling (advanced)
CMOS processing: MBE, CVD, ALD, etch, litho…
Design for high robustness (6 sigma, corner variations, rough environments)
Design for short-range applications (WSN, BAN…)
Design for testability (in a production environment with automated testers)
Electronic system design flow; design of embedded systems & software
Emerging materials and devices (advanced)
Energy harvesting and autonomous applications
Fundamental physics
Hardware and embedded software co-design
High-frequency and mm-wave IC design
High-voltage devices
Integrated high-voltage, high-power design & technology (GaN, SiC…)
IP management, innovation and valorization (for PhD students)
Math skills, like statistics
MEMS for RF applications
Nanotechnology for Health
Opto-electronics and photonics (incl. PV)
Organic electronics: technology and design
Power electronics
Reliability and testing of ICs
Robust design
Security and dependability in electronic systems
Smart system integration
Statistical modeling and simulation methodology
Safe state machine (hardware and software) design, formal proof
Technology, processes to build devices
3D integration : technology and design
Ultra Low-power techniques of IC design
Variability effects and their mitigation in advanced technologies
Wide technical knowledge : e.g. system, process and modeling for designers
Wide market knowledge: market analysis, societal analysis…

3. First Call for Courses in EURO-DOTS-2

FIRST CALL FOR COURSES

1 November 2013

This first 'call for courses' under EURO-DOTS-2 concerns an invitation to universities and training providers to submit proposals for course modules that intend to acquire the EURO-DOTS label and as such become part of the broad EURO-DOTS portfolio. In this call, topics and themes are specified based on the needs expressed by industry and academic instances. The 11 selected themes that are specifically mentioned in this Call have not or only partly been the subject of one of the 92 previous EURO-DOTS courses. Although courses (new ones or reruns of previous courses) dealing with themes that have already been covered before evidently remain welcome, we would particularly like to encourage colleagues to submit courses dealing with one of the 11 selected themes.

There is no hard deadline for this call but submission of such course modules before 31 December 2013 would be strongly encouraged, such that they can appear on the EURO-DOTS Course schedule of 2014.

The EURO-DOTS platform has been operational for about 3 years! More than **90** course modules have been organized so far, dealing with more than **65** topics/themes. In 2013, **33** courses were scheduled of which **28** have already been organized. So far, close to **250** PhD students have applied and have been granted a scholarship for participation in one of our EURO-DOTS labeled and accredited courses. All information can be found on the website www.eurodots.org.

The major objective of the FP7 ICT project-316513 **EURO-DOTS-2** (European Doctoral Training Support in micro/nano-electronics) project is to provide a delocalized (virtual) platform to serve Doctoral Schools in Europe in micro/nano-electronics. Advanced courses in micro/nano-electronics, accredited by major European universities in the framework of their Doctoral Program, are made accessible to European PhD students, offering the opportunity to collect ECTS (European Credit Transfer System) credits throughout Europe. Scholarships for supporting participation to these courses are also made available to PhD students fulfilling some obvious eligibility criteria.

In the previous years, three calls for modules have been launched that resulted in more than 90 accepted courses from all over Europe.

In this Call we again invite and encourage universities and training providers to submit proposals for courses that intend to acquire the EURO-DOTS label and become part of the EURO-DOTS portfolio.

Although each call can be considered as an open call (submission of a course on a topic for which the provider is considered as an expert and is willing to share this know-how with PhD students from all over Europe), we specifically solicit in this Call course modules on **11** so far not yet or only partly covered topics/themes that nevertheless have been identified by industry and academia as being of high importance and high priority. By this new call we intend to further expand the EURO-DOTS PhD course portfolio by advanced courses that progressively fill the gap and cover all aspects of the

micro/nano-electronics domain, addressing the more Moore, More than Moore and Beyond CMOS domains and challenges.

The 11 topics/themes are:

1) **Biomedical electronics & biosensors**
2) **Energy harvesting and autonomous applications**
3) **High-frequency and mm-wave IC design**
4) **Integrated high-voltage, high-power design & technology (GaN, SiC...)**
5) **MEMS for RF applications**
6) **Nanotechnology for Health**
7) **Organic electronics: technology and design**
8) **3D integration : technology and design**
9) **Ultra Low Power techniques for IC design**
10) **Variability effects and their mitigation in advanced technologies**
11) **IP management, innovation and valorization (for PhD students)**

The courses have to fulfill the EURO-DOTS criteria. These can be found on the EURO-DOTS website (see further). All submitted courses are evaluated by the Academic Committee of EURO-DOTS against these criteria and the defined accreditation guidelines, and are eventually granted the EURO-DOTS label. Numerous examples of previous courses can be found on the EURO-DOTS website. This process of evaluation on the average is completed within 1 month after submission. Once accepted, the organizer is invited to provide all detailed information on content as well as on practical issues and then the course is listed on the EURODOTS website and included in the Calendar. PhD students can then apply for a scholarship.

The success of the EURO-DOTS endeavor is determined and measured by the number but mainly by the quality of these courses. The modules remain the full property of the organizer. EURO-DOTS stimulates and encourages development of new and relevant modules but does not finance their development. EURO-DOTS will list and promote the accredited courses via its platform. Part of this promotion is done by granting scholarships to PhD students.

All the necessary information for submitting such courses can be found on the EURO-DOTS website.

The following relevant documents and links can be found:

- The step-by-step procedure for Academia and course providers including the course module submission and selection flow (http://www.eurodots.org/Academia-steps.asp).
- The eligibility criteria for courses that are candidate to acquire the EURO-DOTS label and the accreditation guidelines for these courses as well as the procedures for accreditation by the Academic Committee.
- The CAF (Course Application Form) that needs to be filled in and submitted together with the proposed course program and in which the proposed course is checked against the eligibility criteria.

- How and where to submit the proposal.

We sincerely hope that you will decide to participate and contribute to this European Doctoral Training platform by submitting and organizing training modules within your own field of expertise and as such share this background with this vast research community in Europe.

EURO-DOTS continues to support you in this important dissemination mission!

We are looking forward to your submissions.

Bart De Mey, EURO-DOTS Project Coordinator

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