

Management Plan for Doctoral Studies at IOSUD-UPT

Prof.dr.ing. Romeo Florin SUSAN-RESIGA

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Introduction

The doctoral studies in Romania are currently regulated by an ensemble of laws issued in 2011, such as:

- [1] National Education Law (Legea Educației Naționale), L1/05.01.2011
- [2] Government decision for doctoral studies (Codul Studiilor Universitare de Doctorat), HG 681/2011

In addition, there is a set of ordinances issued by the Minister of Education, Research, Youth and Sport (MECTS), to implement various aspects from [1] and [2].

The “Politehnica” University of Timișoara (UPT), as an institution organizing doctoral studies (IOSUD), to be further referred to as IOSUD-UPT, has its own regulations, in agreement with [1] and [2], such as

- [3] Charter of the “Politehnica” University of Timișoara (Carta Universității “Politehnica” din Timișoara), approved by the university senate on July 21, 2011.
- [4] Institutional regulation for doctoral studies at the “Politehnica” University of Timișoara (Regulamentul instituțional de organizare și desfășurare a studiilor universitare de doctorat în Universitatea “Politehnica” din Timișoara), Nr. 18.874/16.12.2011.

Within this legal framework, IOSUD-UPT (i.e. the doctoral studies component of the “Politehnica” University of Timișoara) is ruled by the Council for University Doctoral Studies (Consiliul pentru Studii Universitare de Doctorat - CSUD). The CSUD-UPT has eight members plus the Director of the CSUD [4, Art. 6(2)]. The CSUD members are appointed, for a 4 years term, as follows [4, Art. 6(5)]:

- Six members are elected by the body of PhD advisors from UPT
- One member is elected by the body of PhD students from UPT
- One member is appointed by the university Rector

The CSUD director position is equivalent to vice-rector, and is appointed for a 4 years term, following a public contest.

The main tasks of the CSUD are [4, Art. 6(8)]:

- a) Establishes the strategy of the IOSUD-UPT
- b) Proposes or modifies the institutional regulation for doctoral studies, to be approved by the university senate
- c) Set current regulations with respect to the doctoral studies, in agreement with the university strategic plan and current national regulations
- d) Establishes criteria for establishing doctoral schools or doctoral divisions within IOSUD-UPT
- e) Approves new doctoral schools or doctoral divisions, as well as elimination of existing ones.
- f) Selects of the PhD advisors for each doctoral school.
- g) Approves internal regulations for doctoral schools/divisions.
- h) Set the general criteria for PhD students enrolment, evaluation, professional performance within doctoral program, as well as minimum standards for public defense of the PhD thesis and criteria for selecting the PhD thesis referees, members of the public defense jury.
- i) Develops procedures for periodic assessment of the doctoral programs and the performances of the PhD advisors
- j) Coordinates the partnerships between IOSUD-UPT and other institutions which run doctoral studies programs
- k) Establishes, in cooperation with the human resources department, the work load criteria for the doctoral schools/divisions
- l) Generates proposals, or approves proposals, for partnerships and/or consortia for running doctoral studies programs, as well as for joint scientific coordination of PhD theses
- m) Initiates and supports proposals and procedures for obtaining financial support (both national and international) for doctoral programs
- n) Promotes the doctoral studies programs from IOSUD-UPT within the national and international academic community

- o) Analyses and provides resolutions for the requests or complaints from doctoral schools/divisions, PhD advisers or PhD students
- p) Other specific attributions in agreement with current regulations concerning doctoral studies.

It is clear from the above rather comprehensive list of tasks that the CSUD plays a central role within the university in assuring the quality, visibility, performance and attractiveness of the doctoral studies programs. As a result, the CSUD Director must insure the proper operation of the CSUD, as well as the CSUD (as ruling body) and the Doctoral Schools (as executive bodies) interaction.

Although nowadays we have an almost comprehensive set of nationwide regulations as far as the doctoral studies are concerned, there was a trend to over-regulate, with sometimes conflicting rules. In addition, the PhD theses which are defended at the universities are subjected to the validation by the National Council for Attestation of University Titles, Diplomas and Certificates (Consiliul Național de Atestare a Titlurilor, Diplomelor și Certificatelor Universitare - CNATDCU). This PhD theses validation process was regulated by the Ordinance of the Ministry of Education, Research, Youth and Sport OMedCTS No. 3504 from March 12, 2012. However, according to the OMedCTS No. 4608 from June 28, 2012, the previous ordinance 3504 is cancelled, thus it no longer produces effects with respect to the PhD theses validation.

Such situations are expected to occur while the legislation is refined, therefore a robust management plan should be based on generally accepted principles with respect to the doctoral studies, while allowing enough flexibility to adjust with the inherent changes in national legislation.

Doctoral studies environment

The most important ingredient to insure the quality of the doctoral studies in a university is to build a suitable academic environment for all participants in this activity.

For the past decade, there was an important shift in the way doctoral studies are organized, as well as in the role played by the doctoral degree:

- Traditionally, the doctoral degree was a long-term career achievement, being an important indicator of a successful career development in academia or research. Nowadays, the doctoral studies are seen as the third cycle in higher education, following the first cycle – bachelor degree, and second cycle – master degree, respectively. As a result, the doctoral degree has become a pre-requisite for a career in universities and research institutes.
- The doctoral studies are considered now a full-time activity, generally having 3 years duration. However, it is possible that the doctoral studies duration be extended with 1-2 years.
- The doctoral program includes two main components: (i) advanced studies within the doctoral school; (ii) individual research program finalized with a doctoral thesis to be publicly defended.

The problem of changes in doctoral degrees is carefully examined worldwide¹, and various recommendations are issued to improve doctoral programs: accepting fewer students into doctoral

¹ Noble, Keith Alan, 1994, *Changing Doctoral Degrees: An International Perspective*, Taylor and Francis.

programs, elimination of the required oral defense of the thesis, payment of salaries to doctoral students, protection of the reciprocity of all doctoral degree programs. Obviously, such recommendations can be considered only within a given legal framework and as a result are of a limited value. On the other hand, the discrepancies between requirements and resources (including human resources) may lead a large number of PhD candidates in science and engineering to fail completing their degrees². As far as the motivation for pursuing a doctoral degree, professorship has traditionally been the single most valued career path³, but new policies may encourage alternative careers in industry and government. It is clear, however, that the commitment of the doctoral students, as well as of their advisers, is strongly related to the career opportunities once the doctoral degree is obtained.

Within IOSUD-UPT, the doctoral programs cover a wide range of engineering domains (chemical, civil, electrical, energy, electronics and telecommunications, industrial, materials, mechanical, system engng., computers and information technology, engineering and management), as well as chemistry and architecture. So far, there is only one doctoral school formally established, with doctoral divisions, each covering one or two doctoral domains. While the CSUD has the main regulating role, the current activities are managed by the doctoral school/divisions, according to [4]. It is clear that the current administrative structures will evolve and consolidate according to the quality standards assumed by the IOSUD-UPT. As a result, a realistic management plan should practically define the main directions for developing and/or consolidating the doctoral programs for a 4-years term, allowing enough flexibility to comply with the new trends, as well as constraints.

Doctoral students

When considering the doctoral students body, I believe that one can definitely start with the statement of Charles M. Vest, President Emeritus of MIT, who said that “As we think about the plethora of challenges, it is important to remember that students are driven by passion, curiosity, engagement, and dreams”. As a result, the set of possible regulations and the corresponding actions should always follow this belief (or hypothesis, if we follow the scientific terminology).

Doctoral students selection

Given the rather short duration of the doctoral program, it is clear that the students to be enrolled in such a program must have a strong background in at least one doctoral domain, with good performance in bachelor/master degrees.

As a result, CSUD needs to actively promote the research projects/activities, as well as the research centers/groups, to the master students both from UPT as well as from other universities. Prospective doctoral students must be well informed from the beginning of their master studies on the

² Garcia-Perez, Alexeis, and Ayres, Robert, 2012, Modelling Research: A Collaborative Approach to Helping PhD Students Develop Higher-Level Research Skills, *European Journal of Engineering Education*, **37**(3), pp. 297-306.

³ Gemme, Brigitte, and Gingras, Yves, 2012, Academic Careers for Graduate Students: A Strong Attractor in a Changed Environment, *Higher Education: The International Journal of Higher Education and Educational Planning*, **63**(6), pp. 667-683.

opportunities to follow a doctoral program. In turn, the doctoral advisors must identify and attract prospective doctoral students, starting with the students in master programs within our universities and continuing with other Romanian universities or universities from abroad.

So far, the international dimension of the doctoral studies within IOSUD-UPT is confined to academic and/or research cooperation activities, but definitely it should include doctoral students from abroad.

Formally, the doctoral students admission procedure at IOSUD-UPT includes two components:

- An interview with the doctoral candidate, where the candidate presents his/her curriculum vitae and the main expectations/intentions with respect to the doctoral program
- A foreign language competence test.

The admission committee assesses quantitatively each candidate, and in the end the candidates with highest marks are admitted within the available number of doctoral fellowships.

It is clear that CSUD must focus the efforts in selecting the doctoral students on two main directions:

- A better interaction with prospective doctoral students, by informing them before the selection process on the available doctoral advisers, main research directions and ongoing projects, available research infrastructure and facilities.
- A more refined selection process, in order to identify the doctoral candidates with strong motivation and background, as well as with proven abilities for scientific research and creativity.

Doctoral students support

Once admitted in the doctoral program, the doctoral students must benefit from all the support within the IOSUD-UPT to develop a successful doctoral training and individual research program, with the main emphasis on:

- Interaction with the doctoral adviser, as well as with senior researchers with expertise in the topic of the thesis, by immersing the doctoral student into a well established research group.
- Doctoral courses that complete the student's background on research methodology and dissemination of the results (communication at international conferences, journal papers, patents, etc.)
- Continuous interaction with other doctoral students, in order to increase the learning slope and transfer the good practice experience.
- Social facilities available at the IOSUD-UPT.

Doctoral thesis quality assurance

Probably the most critical issue of the doctoral program, is the writing of the PhD thesis, as well as the complying with the performance criteria (e.g. journal publications, conference papers, etc.). As a result, CSUD should promote the following actions with respect to the PhD theses:

- Continuous monitoring of the doctoral research programs, in order to insure that the research reports are finalized on time (as scheduled by the doctoral student, in agreement with the adviser), and the results included in the reports are relevant and consistent with the thesis topic.

- The research reports as well as the draft thesis must be presented and discussed within the research groups with senior researchers that have expertise in the thesis topic. This is the basic level of critical review for the doctoral student's achievements.
- The students should be continuously encouraged to include their relevant results in scientific papers (either peer reviewed journal papers, or papers to be presented at conferences with a proper reviewing process), in order to obtain a feedback from independent and anonymous reviewers. It is important to note that the main purpose of publishing the research results is to have an additional confirmation of their originality and scientific value. Further visibility and recognition within the international scientific community will follow.
- CSUD must issue a detailed guideline for PhD thesis writing, including formal aspects (such as template, mandatory parts, graphical standards, references) as well as good practice recommendations for writing style, avoid plagiarism, etc.
- CSUD will continue the good practice within IOSUD-UPT to support the publication of the PhD theses with the Politehnica printing house.

Although the current national regulations include a validation of the PhD theses by the national body CNATDCU, it is clear that the responsibility for the thesis quality rest with the IOSUD-UPT.

Doctoral advisors

The "Politehnica" University of Timișoara has a large body of PhD advisors, including professors with international visibility and recognition. Traditionally, the PhD theses topics were covering applied engineering problems, inspired from real engineering problems, and the main focus was on problem solving with an important experimental component. However, the current perspective on the doctoral programs as the third cycle in higher education, with the corresponding limited duration, should also imply a significant change in the way the doctoral students are conducted and trained.

A new approach in mentoring doctoral research

As a result, CSUD should promote a new approach to be implemented by the PhD advisors, including:

- The PhD advisors should consider the doctoral program for each student as a three-year project, with a clear topic, objective and activities in order to increase the student's capability to finish on time a thesis with significant original contributions.
- The doctoral programs should be run within a research team, including senior researchers working in close cooperation, or under direct coordination, of the PhD adviser.
- It is the main responsibility of the PhD adviser to insure that the doctoral students have access, including proper training, to the required/available research infrastructure to carry out the research activities implied by the individual research program. This includes access to the research infrastructure available at other Romanian universities or universities from abroad.

One possibility to fulfill the above requirements is that the PhD advisor be the director of research grants or contracts, in order to directly include the doctoral student(s) in the research team.

Alternatively, the PhD advisor could closely cooperate, as member of the research team, with other senior researchers in order to co-opt his doctoral students in on-going research projects.

Besides the significant increase in the slope of learning curve, including the doctoral students in the research team of on-going projects may also allow a proper financial support to complement the rather modest doctoral fellowship (approx. 160 EUR per month).

Looking for prospective doctoral students

Within the framework set up the CSUD, the doctoral advisors should actively look for prospective doctoral students, by informing the master students within UPT or from other universities on:

- the offer for doctoral research programs, including research directions/topics, available research infrastructure, and a research team (including senior researchers, postdoctoral researchers, doctoral students) to be joined by the next doctoral student.
- on-going research projects related to the research topics to be approached by the doctoral students.
- opportunities for academic exchanges with other research teams from Romania or from abroad, from which the doctoral student may benefit during the doctoral program.

Nowadays it seems that the main focus when evaluating the PhD advisers is on individual performance reflected in journal publications. Although this indicator is relevant for individual researchers, it is clear that engaging in mentorship activities requires a lot more. We believe that the PhD adviser mentality should be significantly shifted toward focusing on the doctoral student by providing the best training and research environment possible.

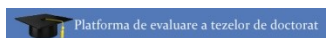
Administrative support for doctoral programs

Information platform for doctoral studies

The large number of PhD advisors (more than 140) and of enrolled PhD students (more than 600) within the IOSUD-UPT raises a challenge with respect to proper monitoring the doctoral activities. It is well known, and obviously understandable, that the main focus of doctoral activities should be active and intensive training and research, with minimum administrative loading. On the other hand, the requirements for monitoring the progress of doctoral students, in order to swiftly offer logistic advice and support when and where it is needed, involve a relative large quantity of information to be collected and processed.

Previous experiences with collecting data,

- the portal “PhD in Romania” <http://www.doctoranzi-romania.ro>
- online thesis submission and evaluation at <http://uefiscdi-direct.ro/CNATDCU-DR/main/>



show that nationwide initiatives are more or less robust, being heavily dependent on the vision of policy makers with the ministry of education, research, youth and sports. As a result, it is clear that our

university should develop an information platform to collect all relevant information on doctoral programs, as well as to act as a communication media for the doctoral advisors and students.

The main requirement of such a platform would be that once a piece of information is uploaded in electronic format and validated, it will not be required later on with a different format, signatures, additional data, etc. The design specifications for this platform is one of the most urgent tasks of the CSUD members, in association with a working group of PhD advisors from all doctoral domains currently active within IOSUD-UPT.

Selections of experts for PhD theses public defense committees

The CSUD should provide criteria for selecting experts (national and international) to serve as members of the public defense committee. This an important component of quality assurance for the PhD theses defended at the IOSUD-UPT. Although nowadays we still have in place an additional national validation of the PhD these in order for the doctoral student to obtain the doctoral degree, it is clear that the responsibility for the theses quality rest on the IOSUD-UPT.

As a result, in cooperation with the PhD advisors, CSUD will create a body of experts, with international prestige and recognition. All committees for public defense if the theses will therefore include only members from this selected body. Also, a structure of the thesis report will be adopted within IOSUD-UPT, such that all relevant attributes of the thesis be examined and assessed by the jury.

Relationship with the doctoral schools/divisions

The CSUD acts as a coordinating and regulatory body for the doctoral studies and programs within the IOSUD-UPT. However, any regulations are actually implemented by the doctoral school(s). Moreover, IOSUD-UPT has established a number of doctoral divisions, within the doctoral schools, to manage the doctoral programs within each doctoral domain (or group of domains). This interim structure is aimed at evolving into a set of doctoral schools, as the current requirements for the members of the doctoral schools council are fulfilled (minimal standards for habilitation, OMedCTS No. 4478 from June 23, 2011).

These administrative structures should enhance the quality of doctoral programs, without hindering the current doctoral activities. As a result, CSUD will work in close relationship with the doctoral schools/division directors, in order to:

- Update the Institutional regulation for doctoral studies at the “Politehnica” University of Timișoara, in order to comply with the current legislation as well as with the quality standards adopted by the IOSUD-UPT
- Insure the suitable financial and logistic support for the doctoral students in order to complete the PhD theses on time, while satisfying the minimum quality standards for originality and relevance of the scientific results, as well as for publications.
- Promote the doctoral programs from IOSUD-UPT, with available human resources and research infrastructure available to run such programs, in order to attract quality prospective doctoral students from Romania and abroad.