

Training Plan of the Doctoral School

University of Pannonia – Doctoral School of Information Science and Technology

Training Programme

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1. The elements of the PhD course and the periods of the training

The elements of the PhD course are the studies, the research activity, the reports and the teaching activity. These activities are controlled by the Doctoral School (later DS) and the fulfilments are approved by giving credits.

The training has two periods:

- study-research period (4 semesters, 120 credits)
- research-dissertation period (further 4 semesters, further 120 credits)

Further 240 credits have to be gained by

- a) acquiring the compulsory material in the study-research period – at least 48 credits
- b) publishing – at least 110 credits from which at least 30 credits in the study-research period
- c) reporting - at least 55 credits from which at least 15 in the study-research period
- d) at least 6 credits by visiting events regarding the doctoral action (visiting a complex exam, home defence, a via), which contains 2 credits by visiting a complex exam in the study-research phase,
- e) maximum 11 credits can be gained by teaching or by any activity supporting the doctoral education

1.1. *Competence*

Our aim is that our graduated PhD students should have the competences as follows:

a) **knowledge**

The PhD student is aware of the general principles of IT Technologies globally as well as in coherence.

He/she knows the subject, the general and the specific features of his/her research area as well as its directions and boundaries, agreed and disputed interrelations.

She has firm knowledge about the interrelations, theories and the terminologies of other sciences' research fields.

He/she extends his/her knowledge regarding his/her research field in an analysing way.

He/she has the right mathematical and linguistic knowledge to be able to evaluate and to publish the data and result of his/her research.

He/she is aware of the research-methodology knowledge which is essential for the independent research in IT.

He/she knows and understands the interrelations, theories and terminologies of IT.

b) capacity

He/she is able to

- recognise the basic IT principles manifested in sociological and natural phenomena.
- to define the scientific background of the phenomena
- to recognise and to phrase the IT problems regarding these phenomena

He/she is able to plan and implement new projects, new work phases independently within his/her research area.

He/she is capable of creative analysis, of phrasing complex, special interrelations in a different point of view, furthermore, he/she is capable of evaluating and critical activity.

He/she is able to elaborate previously unknown methods of theoretical questions.

He/she is capable of recognising the problems of his/her profession and he/she has the necessary theoretical and practical background to solve them.

He/she is able to discover and connect information occurring in IT although they seem to be remote. In the meanwhile he/she is able to recognise the important, decisive and relevant points of view while evaluating the research results.

He/she is capable of analysing, of evaluating critically, scientifically his/her own and somebody else' research results.

He/she is capable of knowledge transfer to expert as well as to on-experts, and of participating in disputes and discussions.

He/she is capable of written and oral communication as well as of national and international cooperation.

He/she is able to summarise, to present his/her knowledge and research results. He/she is able to use the frequent means of publication. (composing articles, books, case studies.)

c) attitudes

His/her special characteristics are creativity, flexibility, problem recognising and solving features, intuition, thoroughness, data processing feature, decisiveness.

He/she aims at identifying, defining unknown, unsolved scientific questions.

He is committed to his/her profession and accepts the necessity of the hard work.

He/she is open to new technologies, to learning new research areas, to transferring knowledge and to incorporation the determining elements into his/her R&D work.

He/she accepts the right criticism as well as others' professional arguments.

He/she committed to scientific cooperation on national as well as international level.

He/she aims to balancing the proportion of the individual and the teamwork.

He/she is characterised by independent and deep scientific work, he/she is open to the teamwork and to support others' work.

d) autonomy and responsibility

He/she undertakes to answer the ethical questions of his/her profession.

He/she can be engaged in scientific disputes.

He is committed to care about nature.

He/she is creative and initiates new solutions.

1.2. Working plan of the students

The PhD programme is carried out by individual curriculum. The curriculum has to be prepared in the first semester by the help of the supervisor by observing the rules of the Doctoral School. Furthermore it has to be sent to the e-mail address di@mik.uni-pannon.hu. The working plan has to be approved by the Doctoral School Board.

- a) The working plan has to contain those subjects which the student wants to attend in order to fulfil the study requirements. Students can attend any courses which are announced by the Doctoral School of the Information Technology and Science or any other doctoral school of information technology- Courses from similar subject areas (e.g computer science, mathematics, engineering) can be attended as well with the agreement of the supervisor and that of the Doctoral Board of Doctoral School of Information Science and Technology.

Students can (should) register for courses announced at foreign universities.

In case of all subjects points as follows have to be provided

- title of the course
- name of the tutor
- place of the announcements (university, doctoral schools or major)
- number of credits
- its schedule

The courses announced by the doctoral schools have to be represented on the homepage of the doctoral school (<http://mik.uni-pannon.hu/di>) together with the tutor's contacts and with the curricula.

- b) The working plan has to be submitted
 - electronically to the e-mail address (di@mik.uni-pannon.hu) of the doctoral school (in pdf) with the student's signature and the supporting signature of the supervisor
- c) The research plan is approved by the board of the doctoral school till the end of the second semester at the latest.

2. Educational part of the PhD course

Courses announced by the doctoral school are grouped into subject field as follows:

1. Image and signal processing,
2. Medical and health informatics,
3. Dynamical systems and control theory,
4. Optimization of large-scale industrial systems and processes
5. Discrete structures and algorithms

Each subject field has a syllabus which is vital for fulfilling the requirements of the theoretical exam. Its announced courses prepare students for the exam.

The Doctoral Board of the Doctoral School accepts only those courses at the registration for the complete exam, whose offer at least 2 courses have been fulfilled successfully from.

A list of outer subjects of similar fields belongs to each subject fields. These subjects are accepted automatically as equal to those announced by the doctoral school.

Those subjects can be registered which are different from the subjects of the outer subjects if the supervisor agrees. In this case this agreement has to be sent to the head of the doctoral school together with the

- subjects title
- name of the tutor
- place of the course (university, doctoral school)
- syllabus.

All the subjects worth equally 8 credits. Students have to fulfil at least 48 credits in the first phase (study-research phase) of the study.

No study credits can be received by fulfilling subjects in the second phase (research-dissertation phase). Exception can be made by the permission of the head of the doctoral school in case of international PhD courses (e.g Summer School).

3. Independent research activity

This phase is the most important part of the doctoral study.

Credits can be received by the publication activity as follows (110 study credits at least):

- an article published in an international journal having ISSN number, registered in SCI in English language worth 50 credits/piece
- an article published in an international journal having ISSN number in English language worth 20 credits/piece
- conference presentation in English at an international conference with a complete; 4 page long proceedings worth 20 credits/piece
- Conference presentation in English at an international conference with an extract worth 10 credit/piece.

In the lack of the resignation statement of the co-author the credits will be divided among the non-foreigner authors having no PhD degree.

The doctoral school can accept the credits if the relevant publication is registered in the MTMT system and it is uploaded onto data sheet of the student on www.dokori.hu

4. Reports and teaching activity

4.1. Compulsory reports (55 credits)

PhD students have to present their progress in each semester orally as well as in writing as well. The doctoral school gives credits for fulfilling the reports in the way as follows:
in the first three semesters: 5-5 credits
from the fifth till the eighth semester : 10-10 credits
in the 4th semester the student does not participate at the half-year report, it is substituted for the complex exam.

In the research-dissertation phase the successful home defence or the viva results in the automatic acceptance of the half-year report.

4.2. Study credit by teaching

Maximum 11 credits can be given to students for teaching activity (contact lessons, test-supervision, test-correction, training, seminar, laboratory, thesis consultation), 6 credits can be given in each semester.

Students cannot be obliged to do tuition. The training activity is evaluated either by the head of the department or by the teacher responsible for the lecture, he/she proposes the credit.

Fulfilling 14 contact lessons (1hour/week) means 2 credits.

4.3. Activities assisting the doctoral education

Maximum 11 credits can be given to students for activities assisting the doctoral education (being a secretary at defences, at final exams, at PhD presentations or organising workshops), but maximum 5 credits can be given in each semester.

The activities assisting doctoral education carried out by the students are certified by the head of the doctoral school who proposes the number of credits. A certified activity worth 5 credits.

4.4. Visiting any doctoral action

In the first, study-research phase of the training students need to visit at least one complex exam after registering to a 2 credit subject titled "visiting a complex exam". The visit is justified by the attendance register.

In the second, research-dissertation phase students need to visit a home defence and a viva justified by an attendance register after registering to a 2 credit subject titled "visiting a home defence and to a 2 credit subject titled "visiting a viva".

5. Modell curriculum

subject	credit	1st semester	2nd semester	3rd semester	4th semester	5th semester	6th semester	7th semester	8th semester
teaching material									at least 48
subject (48	8+8	8+8	8+8					
reports									55
Reports	55	5	5	5	-	10	10	10	10
tuition/other									max 27
tuition	11		6		5				
doctoral tuition.	10				5	5			
visiting	6		2		2			2	
Publications									at least 110
SCI article	50							50	
others	60	10		20	10		20		
Altogether	240	31	29	41	22	15	30	62	10

6. Complex exam

The conditions of letting a student take the complex exam are as follows:

- accomplishing at least 90 credits in the first 4 semesters including at least 30 credits for publications and 48 credits for the educational part as described in the training plan of the doctoral School,
- Accomplishing the “Attending the Complex Exam” course (except for the students participating in the individual training, whose student status emerges by applying for the exam and by being accepted).

the complex exam is public and it is taken in front of a committee. The Committee includes 3 members, one-third of the members are not employed by the institute. The head of the committee is a full professor or a professor emeritus or a researcher, tutor having a Doctor of Science title. The supervisor is allowed to be present as an observer at the non-public discussion of the committee. All the members of the committee have a scientific degree. The supervisor is allowed to be present at the assessment part as an observer.

The supervisor sends the assessment of the student to the head of the committee electronically at least one week prior the exam.

The complex exam consists of two parts:

- theoretical part – the theoretical knowledge of the student is measured
- thesis part – the scientific progress of the student is measured.

The student takes exams in two subjects in the theoretical part:

- one in a major subject, whose list can be found in the doctoral school's training programme titled “Educational part of the PhD part” and on the homepage of the doctoral school and
- one in a minor subject (basic subject) which can be chosen without restriction from the list of the subjects in the field of informatics announced by the doctoral school or announced by any accredited doctoral school of information technology

In the second part of the complex exam the examinee has to present his/her knowledge about the literature, the research results, the research plan for the second phase of the doctoral training and the schedule of preparing the thesis and publishing the results have to be presented. The lecture touches upon the significances of the scientific results, upon its innovative content, upon its research technology motivation if relevant and its practical applicability of the results. The examinee has to submit the summary of his/her results and the publications to the board electronically at least one week prior the exam.

The members of the examination board evaluate the theoretical and the thesis part separately. The complex exam is successful if the majority of the members evaluate the two parts successful. In case of an unsuccessful theoretical exam the examinee can repeat the exam once more in the current exam period. The thesis part cannot be repeated in the current exam period. A record with textual evaluation has to be prepared about the complex exam. The result of the exam has to be announced on the day of the oral exam.

The result of the complex exam cannot be included in the final ranking of the doctoral degree, but it is a prerequisite of entering the second phase of the training.