UP FACULTY OF MATHEMATICS, NATURAL SCIENCES AND INFORMATION TECHNOLOGIES

COMPUTER SCIENCE – doctoral study programme

Course structure and advancement requirements for students, enrolled in the study programme for the first time until the academic year 2021/22

Course structure

The framework of the Doctoral degree study programme is partly structured, but mainly individually-based. The main components of the study programme are the following:

- A comprehensive course in computer science
- In-depth courses in computer science
- Individual research work
- Seminar presentations
- PhD thesis (Doctoral dissertation) and defence

The in-depth courses available to students in the 1st year of study are grouped in the following fields: *theoretical computer science, data structures and algorithms, programming languages and techniques, computer communications and computing systems, system theory and information analysis.* Within the framework of these contents, students will acquire up-to-date knowledge in the field of Computer Science.

In the 1st year, students must complete a *comprehensive course* (1) and *in-depth courses* (4). Each year, students must also complete two seminars, and, in the 1st and 2nd year, perform *individual research work* related to their Doctoral dissertation theme, which they conduct under their mentor's supervision. Students may complete their study with the *Doctoral dissertation*, constituting an authentic contribution to science.

All these activities must add up to at least 180 ECTS.

Courses	ECTS
1ST YEAR	**60**
Advanced Topics in Computer Science I	9
Advanced Topics in Computer Science II	9
Advanced Topics in Computer Science III	9
Advanced Topics in Computer Science IV	9
Comprehensive Course in Computer Science	6
Individual Research Work	6
Seminar	12
2ND YEAR	**60**
Individual Research Work	48
Seminar	12
3RD YEAR	**60**
Seminar	12
Doctoral Dissertation	48

Comprehensive Course in Computer Science

The Comprehensive Course in Computer Science is intended for students to test their knowledge within the broader area of Computer Sciences. The course does not include lectures. At the end of the first semester, students must take a four-part examination consisting of:

- Theoretical Computer Science
- Data Structures and Algorithms
- Programming Languages and Techniques
- System Theory (including Hardware)

Within the course, students may select subjects either at the first or second level to refresh or expand their knowledge. If the student fails to pass the examination, the examination commission determines which courses at the first or second level the student must pass in order to complete their knowledge.

In-depth Courses in Computer Science

In-depth Courses in Computer Science are the courses that students may attend within the study programme they enrolled into. Subjects within any comparable study programme may also be chosen in consultation with the mentor. In particular, in the case of an interdisciplinary study programme, courses within other fields of expertise may also be chosen in consultation with the mentor.

Courses are provided on an individual basis. A special emphasis is placed on the teachers' research activities as the courses cover the latest knowledge and skills in computer science.

Organisation of courses: within a series of eight lectures, the teacher presents the subject, which the students then pursue through individual study of literature (articles) and preparation or review of original scientific articles. These articles are presented in seminars, where the subject is discussed. The majority of student work is concentrated on the study of literature and article writing. The courses available in an individual semester are announced no later than at the beginning of the semester. The courses available fall into one of the following areas:

- Theoretical Computer Science
- Data Structures and Algorithms
- Programming Languages and Techniques
- Computer Communications and Computing Systems
- System Theory and Information Analysis

Courses may be chosen in agreement with the student's mentor.

Students can obtain the literature list from the professors.

Seminars

Within the study programme, a special emphasis is placed on the seminar subject (i.e. seminars). Within the seminar subjects, the students present the partial findings of their research work. These findings must be presented both in written form and verbally. The quality of the research and its findings must allow for a minimum of one contribution or article per year presented at an international conference or published in a scientific journal. In the first year of study, presentations at Slovene conferences and publications in Slovene journals will also be accepted. Within the seminar subject, students are expected to attend the presentations of their fellow students and to actively participate in discussions.

Individual Research Work

Individual Research Work is scientific research carried out by students in the area covered by their doctoral thesis. It is conducted under the mentorship and in consultation with the student's supervisor. To this end, students must select their supervisor before the end of the first study semester.

PhD Thesis (Doctoral Dissertation)

The Doctoral dissertation is an original contribution to science and has to conform to the University PhD rules and regulations. The Doctoral dissertation may also be a collection of related scientific contributions that the student has presented at Slovene and international conferences. At least one of these contributions must have been granted publication in a quality review (either presented at a conference or published in a journal). When these contributions have been previously published in international sources, while the majority of the doctoral thesis is not written in English, the aforementioned contribution may still be included in the thesis in English.

Students may select the topic of the doctoral dissertation upon passing an examination in the Comprehensive Course and examinations in no less than three In-Depth Courses. Other limitations

regarding the selection of the doctoral dissertation topic are laid down in University rules and regulations on Doctoral Dissertations.

Advancement requirements

Students may advance to the 2nd year upon acquiring 42 ECTS-credits in the first study year, or, exceptionally, at least 30 ECTS-credits upon the mentor's recommendation. An examination from the Comprehensive Course is obligatory in both instances. Students may advance to the 3rd year upon completing all obligations required within the structured study programme of the first two years (i.e. In-depth Courses and Comprehensive Course).