

FORMAL REQUIREMENTS AND ADMINISTRATION OF DOCTORAL STUDIES

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PhD programme: **Cartography, Geoinformatics and Remote Sensing (Kartografie, geoinformatika a dálkový průzkum Země)**

Guarantor/Doctoral Board head contact: **Petr Kubíček; kubicek@geogr.muni.cz**

General requirements for all students in the programme (please see detailed requirements for the Individual Study Plan in the detailed table below).

Mandatory courses: *checked by Dean's Office*

ZD011–ZD018	Ph.D. thesis / Příprava dizertační práce	<i>each semester 15 ECTS (120 ECTS during the standard time)</i>
ZD251 – 253 and ZD271 - 273	Programme seminar	<i>enrol course ZD251 – 253 in autumn semesters and courses ZD271 - 273 in spring semesters (12 ECTS)</i>
ZD024 and ZD025	Scientific presentation at conference in English	<i>minimum one-time ZD024 (5 ECTS) and one-time ZD025 (3 ECTS)</i>
ZD026	Foreign internship/ Zahraniční stáž	<i>minimum 2-months stay (or 2-years active collaboration in international project after approval of Doctoral Board) (12 ECTS)</i> Instructions for recognition of Placement Abroad: https://www.sci.muni.cz/en/students/go-abroad/recognition-of-stay-abroad (the recognition is done via IS application Internship and Stays, by creating record of the stay and request for recognition; the course is then registered by Dean's Office)
ZD001–ZD004	Teaching Assistance / Pomoc při výuce	<i>maximum 150 hours total for all studies during the first 4 semesters (12 ECTS)</i>

Theoretical courses and all other requirements: *checked by the Head of Doctoral Board /Guarantor:*

- **Theoretical courses – minimum 6 courses in semesters 1–4 (36 ECTS)**
- **Publication of 3 scientific papers** – min. 1 first-author IF-journal paper (ZD021), 1 co-author SCOPUS-journal of IF-journal paper (ZD022), 1 co-authored reviewed paper(ZD023) (30 ECTS)
- **ZD010 Baseline of PhD thesis / Teze dizertační práce** – defended before the end of Semester 6 (10 ECTS)

(*) Requirements for theoretical SDE:

Theoretical preparation for SDE (after semester 5). A student at the SDE demonstrates that he/she has mastered an in depth knowledge of Cartography, Geoinformatics and Remote Sensing, including appropriate techniques, methodology, and skills. The aim is to examine both the level of knowledge and the ability to actively solve the specific

scientific problem, including their complex understanding and application of corresponding analytical methods and synthesis. The defence of the Baselines of the Ph.D. thesis by an independent reviewer is a part of the state doctoral examination.

The oral exam includes questions from the two testing areas:

-Current trends in cartography, Geoinformatics and Remote Sensing (focused on the topics covered by the Baseline of the Ph.D.)

-Research methods (data acquisition and evaluation, methods of their processing; focused on the topics covered by the Baseline of the Ph.D.)

Elements of the ISP		Milestones and their check				
		Enrolment to studies (Before semester 1)	End of Semester 1	End of Semester 4	End of Semester 6 (Theoretical State Doctoral Exam, SDE *)	End of Semester 8 (Preparation for PhD defence)
(A) research and development activities (65 % of workload)	1. Research, dissertation project , literature search of the actual state of the topic, planning and the scientific activities itself (~50%)	Define framework topic of your PhD project with your supervisor for enrolment CHECK: Dean's office [enrolment] ZD011–ZD018 (15 ECTS each semester) CHECK: Dean's office	Submit detailed “research project” for your PhD work to the Doctoral Board. Max. 4 pages containing Background, Research hypothesis and objectives, Approach-methods, Timeline of foreseen activities, Expected publications. CHECK: Doctoral Board [Submitted project]	No formal check needed	Prepare “Baselines of the PhD thesis” ZD010 (Max. 20 pages) with literature review (text may later be used as Introduction-Summary to final PhD thesis), state of the PhD project, results and planned publications. “Baselines” are reviewed by an independent reviewer (possibly one of the final PhD thesis reviewer). CHECK: Doctoral Board [ZD010, SDE assessment]	Submit PhD thesis according to instructions of Doctoral Board, format according to SCI MUNI requirements CHECK: Doctoral Board, Dean's office

	<p>2. Publications (Thesis should be based on 3 papers demonstrating quality and independence of the student (~15%))</p>	No formal check needed	No formal check needed	No formal check needed	<p>No formal check needed</p> <p>Publications of the student may be included in “Baselines” for SDE (if relevant)</p>	<p>Three papers - minimum criteria: One student’s first-author paper published in IF-journal [ZD021]; one student’s co-author paper published in Scopus-journal [ZD022]; one co-authored reviewed paper [ZD023]. All papers at least in the state “accepted”.</p> <p>CHECK: Doctoral Board [ZD021–ZD023; Thesis]</p>
	<p>3. Presentation of results on scientific seminars, symposia, conferences etc., including preparation of talks and/or</p>	No formal check needed	No formal check needed	No formal check needed	<p>No formal check needed</p> <p>List of presentations may be included in “Baselines” for SDE (if relevant)</p>	<p>At minimum one oral presentation in English at international conference and at least one</p>

	poster presentations (~5%)					poster presentation at international conference CHECK: Doctoral Board [ZD024, ZD025]
(B) Specialized courses and theoretical preparation (20%)	4. Theoretical courses , preparation to the state doctoral exam – SDE (15%)	Enroll ZD 250 and ZD 263 Enroll 2 of the 5 Cartography, Geoinformatics and remote sensing study areas (ZD 264–ZD 267) Identify student’s knowledge gaps and what should be learned in 2 optional courses for the first four semesters. Consider courses at MU or outside. CHECK: Student, Supervisor	No formal check needed	Successfully pass 6 theoretical courses. CHECK: Dean’s office [IS.MUNI]	Have all other requirements fulfilled (see this column) and submit the application to SDE (Doctoral Board organizes SDE further)	Not relevant anymore, all requirements fulfilled before
	5. Doctoral seminars (5%)	Enroll ZD 251 - 253 (obligatory seminar for 3 autumn semesters) Enroll ZD 271 - 273 (obligatory presentation seminar for 3 spring semesters) CHECK: Student	No formal check needed	No formal check needed	Get credits for ZD 251 - 253 (obligatory seminar for 3 autumn semesters) and ZD271 - 273 (obligatory presentation seminar for 3 spring semesters) CHECK: Dean’s office [ZD 251 - 253, ZD 271 - 273]	Not relevant anymore, all requirements fulfilled before
(C) International experience and	6. Further improving of English competences (attend	No formal check needed	No formal check needed	No formal check needed	No formal check needed	At minimum one oral presentation in

competitiveness (5%)	ing courses, seminars, conferences, writing publications, all in English).					English at international conference and at least one poster presentation at international conference CHECK: Dean's office [ZD024, ZD025]
	7. Stay or internship abroad - mandatory participation in international cooperation (5%)	No formal check needed	No formal check needed	No formal check needed	No formal check needed	Minimum 2-months foreign stay, or 2-years collaboration on international project [ZD026] CHECK: Dean's office [ZD026]
(D) Pedagogical competences (20%)	8. Teaching assistance - classrooms, exercises, advising undergrad students and comparable.	Development of pedagogical experiences [ZD001–ZD004] – max. 150 hours through the first 4 semesters CHECK: Student	No formal check needed	Completed 4 semesters of “Development of pedagogical experiences” CHECK: Dean's office [ZD001–ZD004]	Not relevant anymore, all requirements fulfilled before	Not relevant anymore, all requirements fulfilled before
(E) Other transferrable skills.	9. Career development - preparation and management of	No formal check needed	No formal check needed	No formal check needed	No formal check needed	No formal check needed

	projects, scientific writing, communication, other soft-skills.					
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Recommended theoretical courses

ZD264 Theoretical cartography

ZD265 Applied cartography

ZD266 GIScience

ZD267 Remote sensing