Study regulations for a structured doctoral program in geoinformatics "Graduate School for Geoinformatics" at the Westfälische Wilhelms-Universität Münster

dated August 7, 2012

Preliminary remarks

§ 32 of the doctoral degree regulations for the geosciences department of the Westfälische Wilhelms Universität Münster dated May 23, 2012 (AB Uni 20/2012, p. 1900) stipulates that the doctorate in the geosciences department should also be part of a structured

doctoral program in geoinformatics. The faculty council of the faculty of geosciences at the Westfälische Wilhelms - Universität Münster decides to set up such a doctoral program "Graduate School for Geoinformatics": The doctoral procedure takes place according to the doctoral regulations for the faculty of geosciences, the study within the framework of the "Graduate School for Geoinformatics" follows these study regulations .

§ 1 Goal

Structured doctoral training in the Graduate School for Geoinformatics is intended to meet the requirements of academic competition and make it easier for doctoral candidates to start an academic career later. The number of high-quality research publications by doctoral students is to be increased and international dialogue promoted.

§ 2 Study content

(1) In the Graduate School for Geoinformatics doctoral studies, doctoral students are offered research-oriented studies and the acquisition of key academic qualifications.

(2) The structured doctoral studies in the Graduate School for Geoinformatics consists of various phases and milestones according to § 5. On the other hand, the structured doctoral studies in the Graduate School for Geoinformatics a course program of 30 credit points as further defined by the module descriptions attached as an appendix, which are part of these study regulations.

§ 3 selection procedure

(1) The application process for the Graduate School for Geoinformatics will take place once per semester carried out. The respective deadlines and research areas are determined by the Institute for Geoinformatics. The calls for tender are published worldwide with appropriate advance notice.

(2) Applicants must submit the following application documents both in electronically as well as in paper form within the period to be determined by the Institute for Geoinformatics:

1. Letter of motivation for the program in general and the research field in particular Elaborated proposal for a dissertation topic (max. 2 pages), usually related to one of the advertised
2. research fields
3. CV in EU format
4. University certificate (or certificates if applicable) including transcript of records
5. Proof of English language skills (TOEFL 550 paper-based or equivalent)
6. Publications (if applicable)
7. Proof of other qualifications (if applicable)
8. Two letters of recommendation from former supervisors or other scientific university members 9. Proof of citizenship

including a passport photo.

(3) The selection is made by the Institute for Geoinformatics in a two-stage process based on the selection criteria that can be viewed on the website of the Graduate School for Geoinformatics:

a. Pre-selection based on application documents, if necessary with telephone/Skype interview: Selection criteria are academic degree (grade and relevance), quality of the dissertation proposal, knowledge of English, academic experience and results, motivation and formal aspects of the application.

b. Selection workshop in Münster: The best candidates from the pre-selection are usually invited to a selection workshop in Münster.

(4) All professors at the Institute for Geoinformatics form the board of the Graduate School for Geoinformatics and make the final decisions about the selection.

(5) The selected doctoral students are to be nominated by April 1st. or 1.10. of a year in the Graduate School for Geoinformatics. The start of a doctorate can also deviate from these standard dates, although it is still assigned to a cohort and the time deviation is kept as small as possible. A professor at the Institute for Geoinformatics can also decide to accept a doctoral student, whereby their admission to the Graduate School for Geoinformatics with the aim of

Consensus is sought in the following selection process.

§ 4 Enrollment, first supervisor and co-supervisor in the
doctoral program Graduate School for Geoinformatics

(1) Enrollment takes place in the doctoral program Graduate School for Geoinformatics of Faculty 14 Geosciences.

(2) Every doctoral student is structured within the framework of his/her
Doctoral studies in the Graduate School for Geoinformatics from a first supervisor
or one primary supervisor and two co-supervisors. The three supervisors are responsible in particular for monitoring the phases and milestones (§ 5) and the course program of 30 credit points (Appendix).

(3) The first supervisor and the co-supervisor are appointed by the board of the Graduate School for Geoinformatics.

(4) The primary supervisor is the primary supervisor from the Institute for
Geoinformatics, which is the topic of the dissertation. The one co-supervisor can be from the Institute for Geoinformatics, but also an external person. As a rule, the other co-supervisor is from the institution hosting the mobility measure (see below).

(5) The first supervisor should also be the first assessor in the sense of the doctoral degree regulations of the department. One of the two co-supervisors can also be a second assessor in the sense of the doctoral regulations of the department.

§ 5 phases and milestones, total duration

(1) The doctoral training consists of different phases with corresponding milestones for each cohort:

Phase 1 – Introduction, M 1-6 (M = month): Milestones: preliminary course program (M1), quarterly progress reports (M3, M6), dissertation proposal, including an analysis of the state of research and a publication plan (M5), plan for the mobility measure (M6).

Phase 2 – Exploration, M 7-18: Milestones: quarterly progress reports (M9, 12, 15, 18), defense of the revised dissertation proposal (M 12), submitted publication at an international conference (M 18), optional: further publications.

Phase 3 - Implementation, M 19 - 30: Milestones: quarterly progress reports (M 21, 24, 27, 30), publication submitted to an international journal (M 30), optional: further publications.

Phase 4 – Completion, M 31 - 36: Milestones: quarterly progress report (M 33), synopsis of the doctoral thesis (M 33), final version of the doctoral thesis (M 36).

Phase 5 - Mobility, between M 7 and M 36: usually a three to six month period
Exchange action according to an individual schedule. Milestones: quarterly progress reports, mobility report.

Optional phase: In justified cases, further phases can be specified individually.

Phase 1 is a deliberately short preparatory phase. It serves to refine the doctoral topic submitted in the application, to settle into the new research environment and to attend the first events of the course program.
Phase 1 begins with an orientation session and ends with a formal dissertation proposal and a literature review on the research field. As in all phases, quarterly progress reports are produced, which form the basis for the

Present discussions with supervisors. At the beginning, a preliminary study plan is submitted, including the intended course program.

Phase 2 generates the first scientific results. Significant milestones are the defense of a revised dissertation proposal and the submission of a publication as sole or first author at an international conference in order to receive substantial feedback on one's own scientific work. The doctoral students continue to attend the research colloquium and other events in the course program. PhD students

acquire interdisciplinary theoretical and practical experience through involvement in the research environment (e.g. doctoral theses of their colleagues, workshops, experiments). But first and foremost they carry out theoretical and experimental work as part of their doctoral thesis, which leads to a publication at an international conference and possibly to further publications. As part of their course program, they attend a summer school and organize an international symposium or workshop in the group (also possible in phase 3). Great attention is paid to the networking of doctoral students within the international scientific community in the respective subject area.
Therefore, all doctoral students are encouraged to start publishing their research results as early as possible and to attend conferences to exchange ideas with colleagues.

Phase 3 is the most productive phase in terms of final scientific results.
An important milestone is the submission of a journal article as sole author or first author. Further publications will be submitted depending on the individual publication plan.

In phase 4, the doctoral thesis is completed. Assuming that most
PhD theses are cumulative (based on at least three excellent publications as sole author or first author), the essential milestone is a synopsis of the PhD thesis before the final version is submitted.

Phase 5 consists of a three to six-month mobility measure with an external company
Partner (university or industry or authority), whereby the host institution provides a supervisor, usually a co-supervisor of the doctoral program. The main goal is the continuation of the doctoral thesis.
The mobility measure complements the methods, applications and cultural background of a doctoral student with the perspectives, experiences and know-how of the host institution. Usually the mobility measure takes place within phase 2 or 3, but depending on the individual research plan it can also be carried out in phase 4. The duration depends on the individual framework conditions: A scholarship holder is more likely to carry out a six-month mobility measure, a project employee with corresponding project obligations more a three-month measure. In justified exceptional cases, e.g. due to the family situation, a mobility measure can be dispensed with in individual cases or alternative measures can be used

solutions are determined.

Optional phase: Due to external requirements (e.g. as part of an Erasmus Mundus doctoral program) or individual requirements of doctoral students, further phases can be determined, for example a one-month industrial internship, a six-week research stay or the implementation of a course by the doctoral student.

(2) The total duration of 36 months is intended for those doctoral students who have little or no obligations outside of their doctoral thesis, for example due to a scholarship. For doctoral students with additional commitments, such as project staff, the total duration can be up to 4.5 years. The total duration is determined at the beginning of the doctorate. An extension is possible on request in justified cases; the Executive Board decides on this.

§ 6 Structure of the course program in modules

(1) The course program has a modular structure. Modules are study units defined thematically, in terms of content and time, which lead to partial qualifications related to the respective study objective, which are defined in a learning objective. Modules can be made up of events from different forms of teaching and learning. Modules usually consist of courses from one or more semesters.

According to the module descriptions, there may be options as well as differences in the individual years of study with regard to the courses to be completed within a module.

(2) The successful completion of a module requires the completion of the intended events and the passing of the coursework assigned to the module. It leads to the acquisition of credit points in accordance with the module descriptions.

(3) The module descriptions determine the frequency with which each module is offered.

§ 7 Passing and evaluation of academic achievements

(1) The module descriptions regulate the courses to be completed in order to acquire credit points and existing study achievements.

(2) Academic achievements are recognized by successfully passing one or more performance reviews performed. These can be in particular: exams, presentations, term papers, seminar papers, (practical) exercises, participation in projects, oral performance reviews, lectures or minutes.

(3) Academic achievements are rendered in the language specified by the organizer.

(4) Study achievements must be passed in order to complete the module; the more detailed provisions for passing study achievements are made in consultation between the doctoral candidate and the primary supervisor.

§ 8 Recognition of achievements on the course program

(1) Coursework and exams taken at other universities in and outside of the If they are of equal value, they can be credited to the achievements to be achieved in the structured doctoral program upon application. The same applies to study and examination achievements that are passed on to others

Institutions (research institutions, scientific associations, etc.) are provided.

(2) Equivalence is determined by the Board of Directors of the Graduate School for Geoinformatics established.

§ 9 Recognition of achievements towards doctoral studies

The achievements made in the course program are not included in the overall grade of the doctoral degree in terms of the doctoral regulations of the Department of Geosciences.

§ 10 Certificate (diploma supplement with transcript of records) on the structured doctoral studies

Doctoral students who are enrolled in the modules in the appendix to these study regulations have achieved at least 30 credit points and fulfilled the phases and milestones according to § 5, after successful completion of the doctorate, in addition to the documents according to the doctorate regulations of the department, receive a certificate (diploma supplement with transcript of records) about participation in the structured doctoral program in the Graduate School for Geoinformatics, which shows the modules attended and the grades achieved.

§ 11 Entry into force and publication

These study regulations come into force on the day after their publication in the official announcements of the Westfälische Wilhelms-Universität (AB Uni).

It applies to all students who have been doing their doctorate within the Graduate School for Geoinformatics since April 1st, 2012.

Issued on the basis of the decision of the faculty council of the faculty of geosciences at the Westfälische Wilhelms-Universität on October 26, 2011.

Munster, August 7, 2012

The principal

In representation

Marianne Ravenstein

dr Marianne Ravenstein

(Prorector for Teaching and Student Affairs)

The above regulations are in accordance with the regulations of the Westfälische Wilhelms-Universität on the promulgation of regulations, the publication of resolutions and the publication of statutes of February 8, 1991 (AB Uni 91/1), amended on December 23, 1998 (AB Uni 99 /4), hereby announced.

Munster, August 7, 2012

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Attachment:

Course program (module descriptions) of the Graduate School for Geoinformatics

<table>
<tr><td colspan="2">Module title German: Introductory event
Module title English: Orientation camp
Course of studies: Doctoral studies Graduate School for Geoinformatics</td></tr>
<tr><td>1</td><td>Module number: 1 Status: [x] compulsory module [ ] compulsory elective module</td></tr>
<tr><td>2</td><td>cycle: summer and winter semester, a total of 1 CP workload total 30 h</td></tr>
<tr><td>3</td><td>Module structure:
<table>
<tr><th></th><th></th><th>Course no. Type</th><th>status</th><th>LP attendance (h/SWS)</th><th>self-study (h)</th></tr>
<tr><td>1</td><td></td><td>orientation camp</td><td>[x] P [ ] WP 1</td><td></td><td>16/1</td><td>14</td></tr>
</table></td></tr>
<tr><td>4</td><td>Course
content: The doctoral students get to know the organizational structure of the doctoral program and the institute as well as their fellow students and the teachers. In addition, the module provides initial insights into the scientific work in the doctoral program.</td></tr>
<tr><td>5</td><td>Acquired skills: The module
essentially serves to help the doctoral students find their way around in their new environment.
They also gain initial insights into scientific methods.</td></tr>
<tr><td>6</td><td>Description of options within the module:
No</td></tr>
<tr><td>7</td><td>Coursework: None</td></tr>
<tr><td>8th</td><td>The award of credit points requires participation in the event.</td></tr>
<tr><td>9</td><td>Module-related participation requirements: None</td></tr>
<tr><td>10</td><td>Module representative: Dr. Christopher Brox
Responsible department: Faculty 14 Geosciences</td></tr>
</table>

Module title German: Research colloquia
Module title English: Research colloquia
Course of studies: Doctoral studies Graduate School for Geoinformatics

1 Module number: 2 Status: [x] Compulsory module [ ] Elective module

2 Cycle: winter and summer semester, a total of 6 CP workload total 180 h

3 Module structure:

No.	Type of course		status	LP	presence (hours per week)	self-study (h)
1		Research colloquium 1st semester Research	[x] P [ ] WP 1		15/1	15
2		colloquium 2nd semester	[x] P [ ] WP 1		15/1	15
3		Research colloquium 3rd semester Research	[x] P [ ] WP 1		15/1	15
4		colloquium 4th semester Research colloquium 5th	[x] P [ ] WP 1		15/1	15
5		semester Research colloquium 6th semester	[x] P [ ] WP 1		15/1	15
6			[x] P [ ] WP 1		15/1	15

4 Course content: Research colloquia are basic tools for learning about new and innovative research topics and for discussion with colleagues and external scientists.

5 Skills acquired: Specialist knowledge, discussion skills, networking Description of

6 options within the module:
If several research colloquia are offered, you can choose freely.
If possible, research colloquia are also attended during the mobility measure at the external partner.

7 Academic achievements:
No

8th The award of credit points requires participation in the events.

9 Module-related participation requirements: None

10 Module representative: Prof. Dr. Christian Kray
Responsible department: Faculty 14 Geosciences

Module title German: Virtual research seminar
Module title English: Joint virtual research seminar
Course of studies: Doctoral studies Graduate School for Geoinformatics

1 Module number: 3 Status: [x] Compulsory module [ ] Compulsory elective module

2 Cycle: winter and summer semester, a total of 3 CP workload total 90 h

3 Module structure:

		Course no. Type	status	LP	Presence (h/ SWS)	self-study (h)
1		Joint virtual research seminar, 1st semester, approx. every 2 months	[x] P [ ] WP	0.5	8/0.5	7
2		Joint virtual research seminar, 2nd semester, approx. every 2 months	[x] P [ ] WP	0.5	8/0.5	7
3		Joint virtual research seminar, 3rd semester, approx. every 2 months	[x] P [ ] WP	0.5	8/0.5	7
4		Joint virtual research seminar, 4th semester, approx. every 2 months	[x] P [ ] WP	0.5	8/0.5	7
5		Joint virtual research seminar, 5th semester, approx. every 2 months	[x] P [ ] WP	0.5	8/0.5	7
6		Joint virtual research seminar, 6th semester, approx. every 2 months	[x] P [ ] WP	0.5	8/0.5	7

4 Course content: The joint virtual research seminar serves to communicate and discuss research results with external partners and doctoral students during the mobility measures.

5 Skills acquired: New media, communication, online presentation, specialist knowledge, scientific methods Description of options within the module:

6 If no joint virtual research seminar is offered due to a lack of demand, parts of this module or the entire module can be replaced by services from module 4. Coursework:

7 None

8th The award of credit points requires participation in the events.
(Participation will be confirmed by the first assessor at the end of the course program, collected by the person responsible for the module).

9 Module-related participation requirements: None

10 Module representative: Prof. Dr. Edzer Pebesma
Responsible department: Faculty 14 Geosciences

Module title in German: Interdisciplinary courses
Module title English: Interdisciplinary courses
Course of studies: Doctoral studies Graduate School for Geoinformatics

1 Module number: 4 Status: [x] Compulsory module [ ] Elective module

2 Cycle: winter and summer semester, a total of 4 CP workload total 120 h

3 Module structure:

No.	Type of course		status	LP	Presence (h/ SWS)	self-study (h)
1		interdisciplinary courses from the Course offerings EMU and external partner	[x] P [ ] WP 4		Depending on the chosen event	Depending on the chosen event

4 Course content: These courses align the different previous knowledge of the doctoral students and provide insights and acquired skills; Complementary specialist knowledge, methodological complementary disciplines.

5 skills

6 Description of options within the module:
Courses of any scope can be selected from the range of courses offered by the University of Münster or external partners; at least one course must be attended.
The choice of events is coordinated with the primary supervisor.

7 Coursework: At least one coursework must be completed in each course. The lecturer will announce the type, duration and scope of the coursework in a suitable manner before the start of the event. A module grade is not calculated.

8th The award of credit points requires participation in the events and the passing of the respective academic achievement.

9 Module-related participation requirements: None

10 Module representative: Prof. Dr. Werner Kuhn
Responsible department: Faculty 14 Geosciences

Module title in German: Advanced geoinformatics topics
Module title English: Advanced GI Topics
Course of studies: Doctoral studies Graduate School for Geoinformatics

1 Module number: 5 Status: [X] Compulsory module [ ] Elective module

2 Cycle: winter and summer semester, a total of 9 CP Workload total 270 h

3 Module structure:

No.	Type of course		status	LP presence (hours per week)	self-study (h)
1		advanced Geoinformatics topics from the courses offered by the WWU and external partners	[x] P [ ] CP 9	Depending on the chosen event	Depending on the chosen event

4 Course content: These courses provide in-depth specialist knowledge in special areas of geoinformatics.

5 Acquired skills: In-depth specialist knowledge, in-depth methodological skills

6 Description of options within the module:
Courses of any scope can be selected from the range of courses offered by the University of Münster or external partners; at least one course must be attended.
The choice of events is coordinated with the primary supervisor.

7 Academic achievements:
At least one academic achievement must be completed in each course. The lecturer will announce the type, duration and scope of the course work in a suitable manner before the start of the event.

A module grade is not calculated.

8th The award of credit points requires participation in the events and the passing of the respective academic achievement.

9 Module-related participation requirements: None

10 Module representative: Prof. Dr. Angela Schwering
Responsible department: Faculty 14 Geosciences

Module title in German: key qualifications
Module title English: General studies
Course of studies: Doctoral studies Graduate School for Geoinformatics

1 Module number: 6 Status: [X] Compulsory module [ ] Elective module

2 Cycle: winter or summer semester, a total of 3 CP workload total 90 h

3 Module structure:

No.	Type of course		status	LP	presence (hours per week)	self-study (h)
1		Events offered by the University of Münster and external partners	[x] P [ ] WP	3	Depending on the chosen event	Depending on the chosen event

4 Course content: Additional key qualifications are essential for career opportunities, e.g Research methodology, ethics, languages and project management

5 Acquired skills: Depends on the specific course, eg method skills, languages, project management

6 Description of options within the module:
Courses of any scope can be selected from the range of courses offered by the University of Münster or external partners; at least one course must be attended.
The choice of events is coordinated with the primary supervisor.

7 Academic achievements:
At least one academic achievement must be completed in each course. The lecturer will announce the type, duration and scope of the coursework in a suitable manner before the start of the event.
A module grade is not calculated.

8th The award of credit points requires participation in the events and the passing of the respective academic achievement.

9 Module-related participation requirements: None

10 Module representative: Dr. Christopher Brox
Responsible department: Faculty 14 Geosciences

Module title in German: summer school

Module title English: Summer school

Course of studies: Doctoral studies Graduate School for Geoinformatics

1 Module number: 7 Status: [X] Compulsory module [ ] Elective module

2 Cycle: winter or summer semester, a total of 2 CP workload total 60 h

3 Module structure:

No.	Type of course		status	LP	presence (hours per week)	self-study (h)
1		summer school	[x] P [ ] WP	2	Depending on the chosen event	Depending on the chosen event

4 Course content: Doctoral students choose between various offers from summer schools inside and outside EMU. Alternatively, you can also attend courses at partner universities.

5 Acquired skills: In-depth specialist knowledge, methodological skills, networking, multicultural skills

6 Description of options within the module:
Courses of any scope can be selected from the range of courses offered by the University of Münster or external partners; at least one course must be attended.
The choice of summer school is coordinated with the first supervisor.

7 Academic achievements:
At least one academic achievement must be completed in each course. The lecturer will announce the type, duration and scope of the coursework in a suitable manner before the start of the event.
A module grade is not calculated.

8th The award of credit points requires participation in the event and the passing of the respective academic achievement.

9 Module-related participation requirements: Dependent on the specific summer school.

10 Module representative: Prof. Dr. Werner Kuhn
Responsible department: Faculty 14 Geosciences

Module title German: Symposium/Workshop
Module title English: Symposium/Workshop
Course of studies: Doctoral studies Graduate School for Geoinformatics

1	Module number: 8 Status: [X] Compulsory module [ ] Elective module
2	Cycle: winter or summer semester, a total of 1 CP workload total 30 h
3	Module structure:

No.	Type of course		status	LP	presence (hours per week)	self-study (h)
1		Symposium/Workshop [x] P	[ ] WP	1	15	15

4	Course content: A special component of the doctoral program is an annual research symposium organized by the group of doctoral students. It ensures regular interaction among all doctoral students and imparts important skills such as conducting a peer review and holding a scientific event. Alternatively, doctoral students can also organize a scientific workshop, for example as a side event of a scientific conference.
5	Skills acquired: Networking, project management, peer review, in-depth knowledge, communication
6	Description of options within the module: The choice of the event is coordinated with the first supervisor.
7	Academic achievements: No
8th	The award of credit points requires participation in the event.
9	Module-related participation requirements: None
10	Module representative: Prof. Dr. Christian Kray Responsible department: Faculty 14 Geosciences

Module title German: career development
Module title English: Career development
Course of studies: Doctoral studies Graduate School for Geoinformatics

1 Module number: 9 Status: [X] Compulsory module [ ] Elective module

2 Cycle: winter or summer semester, a total of 1 CP workload total 30 h

3 Module structure:

No.	Type of course		status	LP	presence (hours per week)	self-study (h)
1		Career development	[x] P [ ] WP	1	Depending on the chosen event	Depending on the chosen event

4 Course content: Special block course or additional event as part of conferences, symposiums or workshops or from the range offered by the WWU (Career Service, House of Young Talent)

5 Skills acquired: Career development

6 Description of options within the module:
Courses of any scope can be selected from the range of courses offered by the University of Münster or external partners; at least one course must be attended.
The choice of events is coordinated with the first supervisor.

7 Academic achievements:
At least one academic achievement must be completed in each course. The lecturer will announce the type, duration and scope of the coursework in a suitable manner before the start of the event.
A module grade is not calculated.

8th The award of credit points requires participation in the event and the passing of the respective academic achievement.

9 Module-related participation requirements: None

10 Module representative: Prof. Dr. Edzer Pebesma
Responsible department: Faculty 14 Geosciences