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**The legally binding version of these regulations can only be found in our Official Notices.**

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# Doctoral degree regulations of the Department of Resources and Sustainability of the Graduate School for Applied Research in North Rhine-Westphalia

from 14.04.2023

Based on § 67b (3) and § 67 (3) of the Higher Education Act of the State of North Rhine-Westphalia (Hochschulgesetz – HG) of September 16, 2014, as amended by the Act Amending the Higher Education Act of July 12, 2019 (GV. NRW. p. 377) and the Framework Doctoral degree regulations of the Graduate School for Applied Research in North Rhine-Westphalia of January 31, 2023 (RPO), the Department council of the Department of Resources and Sustainability has issued the following doctoral degree regulations:

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## Preamble

The doctoral degree regulations take into account the general legal framework and the framework doctoral degree regulations of the Graduate School NRW (RPO). Together with these, they are intended to contribute to the achievement of a uniform quality standard for the doctoral procedures and the corresponding doctoral degrees to be awarded through a high level of procedural transparency and quality assurance measures. The doctorate takes place within the framework of the department's doctoral program.

### § 1 Scope of application

(1) These doctoral degree regulations apply to all doctoral procedures carried out in the Department of Resources and Sustainability of the Graduate School for Applied Research in North Rhine-Westphalia.<sup>1</sup> Insofar as no provisions have been made in these doctoral degree regulations, the corresponding rules of the framework doctoral degree regulations of the Graduate School for Applied Research in North Rhine-Westphalia apply.

(2) In the case of interdepartmental doctoral topics, a department is appointed whose doctoral degree regulations are used for the procedure. The supervisors, reviewers and members of the examination committee are appointed in such a way that the departments involved are represented accordingly.

### § 2 Conferral of doctoral degrees

(1) Due to the passed doctoral examination the department awards the following degrees in the doctoral program Resources and Sustainability:

1. Doktor der Ingenieurwissenschaften (Doktor-Ingenieur – Dr.-Ing.),  
Doktorin der Ingenieurwissenschaften (Doktor-Ingenieurin – Dr.-Ing.),  
Doktor\*in der Ingenieurwissenschaften (Doktor-Ingenieur\*in – Dr.-Ing.)
2. Doktor der Naturwissenschaften (Doctor rerum naturalium – Dr. rer. nat.),  
Doktorin der Naturwissenschaften (Doctor rerum naturalium – Dr. rer. nat.),  
Doktor\*in der Naturwissenschaften (Doctor rerum naturalium – Dr. rer. nat.)
3. Doktor der Gesellschaftswissenschaften (Doctor rerum politicarum – Dr. rer. pol.),  
Doktorin der Gesellschaftswissenschaften (Doctor rerum politicarum – Dr. rer. pol.),  
Doktor\*in der Gesellschaftswissenschaften (Doctor rerum politicarum – Dr. rer. pol.) or  
Doktor der Sozialwissenschaften (Doctor rerum politicarum – Dr. rer. pol.),  
Doktorin der Sozialwissenschaften (Doctor rerum politicarum – Dr. rer. pol.),  
Doktor\*in der Sozialwissenschaften (Doctor rerum politicarum – Dr. rer. pol.) or

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<sup>1</sup> The provisions in these regulations do not apply to cooperative doctoral procedures in which the procedure is conducted exclusively via the right to award doctorates of the university or other universities entitled to award doctorates.

Doktor der Wirtschaftswissenschaften (Doctor rerum politicarum – Dr. rer. pol.),  
Doktorin der Wirtschaftswissenschaften (Doctor rerum politicarum – Dr. rer. pol.),  
Doktor\*in der wirtschaftswissenschaften (Doctor rerum politicarum – Dr. rer. pol).

(2) The academic degree of Doktor der Ingenieurwissenschaften (Doktor-Ingenieur – Dr.-Ing.), Doktorin der Ingenieurwissenschaften (Doktor-Ingenieurin – Dr.-Ing.) or Doktor\*in der Ingenieurwissenschaften (Doktor-Ingenieur\*in – Dr.-Ing.) is awarded if the dissertation is predominantly of an engineering nature. The academic degree of Doktor der Naturwissenschaften (Doctor rerum naturalium – Dr. rer. nat.), Doktorin der Naturwissenschaften (Doctor rerum naturalium – Dr. rer. nat.) or Doktor\*in der Naturwissenschaften (Doctor rerum naturalium – Dr. rer. nat.) is awarded if the dissertation is predominantly of a natural scientific nature. The academic degree of Doktor resp. Doktorin resp. Doktor\*in der Gesellschaftswissenschaften or Sozialwissenschaften or Wirtschaftswissenschaften (Doctor rerum politicarum – Dr. rer. pol.) is awarded if the dissertation is predominantly of a social, socio-economic or economic nature.

The decision is made by the responsible doctoral examining committee.

### **§ 3 Purpose and form of the doctorate**

(1) The doctorate serves as proof of the ability to carry out in-depth academic work in one of the department's specialist areas. The doctorate is based on independent academic work (dissertation) and an oral examination (disputation).

(2) The doctorate takes place within the framework of the doctoral program specified in § 2 (1). The courses listed in the doctoral program must be attended. The agreements made in the supervision agreement must also be adhered to. Both are part of the requirements for admission to the doctoral procedure. Doctorates can also be carried out across departments.

(3) Enrollment is regulated in § 3 (4) of the RPO.

(4) The duration of the doctorate should not exceed five years. In justified cases, the Doctoral examining committee may extend the period by one year twice upon application; the application must be accompanied by a justification and a statement from the supervisors responsible for the subject. Upon expiry of the maximum permissible duration of the doctorate, acceptance for the doctorate expires, unless the doctoral procedure has already been initiated. Protection periods and leaves of absence in accordance with § 20 are not counted towards the duration of the doctorate.

### **§ 4 Doctoral examining committee**

The composition, responsibilities and working methods of the doctoral examining committee are regulated in § 4 of the RPO.

## **§ 5 Admission requirements**

(1) Admission to the doctoral procedure is regulated in the RPO. If necessary, the doctoral examining committee may require additional pre-doctoral studies. The pre-doctoral studies should be limited to two semesters and are passed if all modules to be taken have been successfully completed. The requirements must be fulfilled by the start of the doctoral procedure, unless another deadline is specified.

(2) If the qualifying degree according to § 5 sentence 1 a) to c) of the RPO was not awarded in a natural science (Dr. rer. nat.) or engineering (Dr.-Ing.) or social sciences or economics (Dr. rer. pol.), the doctoral examining committee may exceptionally admit the applicant to doctoral studies, provided that the other admission requirements are met.

## **§ 6 Acceptance as a doctoral candidate**

(1) Acceptance as a doctoral candidate is regulated in § 6 of the RPO.

(2) Acceptance is initially limited to five years and can be extended twice by one year upon application, provided that the supervisors of the thesis confirm that the doctoral project can be successfully completed.

## **§ 7 Supervision**

Supervision is regulated in § 7 (1) to (9) of the RPO. For the supervision team, the binding appointment of a lead contact person also applies. Particular attention must be paid to compliance with the obligations specified in the respective supervision agreement.

## **§ 8 Opening of the doctoral procedure**

The opening of the doctoral procedure is regulated in § 8 of the RPO.

## **§ 9 Reviewers**

(1) The appointment and exclusion of reviewers is regulated in § 9 of the RPO.

(2) In the case of interdisciplinary doctoral projects, the reviewers should be appointed in such a way that the disciplines involved are represented.

## **§ 10 Examination board**

(1) The composition and working methods of the examination board are regulated in § 10 of the RPO.

(2) In the case of interdisciplinary doctoral projects, the members of the examination committee should be appointed in such a way that the disciplines involved are represented.

### **§ 11 Dissertation**

(1) The provisions of § 11 of the RPO apply.

(2) In addition to the provisions of RPO § 11 (4), the doctoral candidate must be named as the first author in at least three of the articles in the case of a cumulative doctorate. Two of the articles must have already been accepted or published.

(3) The review should be submitted in digital and printed form. As a rule, each reviewer must submit a written, reasoned review to the doctoral examining committee no later than two months after being appointed as a reviewer.

(4) The deadline for submitting the dissertation and the reviews to the department in accordance with § 11 (9) of the RPO may be shortened at the request of the doctoral candidate if there are serious reasons for doing so.

(5) The doctoral candidate is not permitted to inspect the reports during the display period.

### **§ 12 Disputation**

The conduct and assessment of the oral defense is regulated in § 12 of the RPO. The oral examination must be held in German or English.

### **§ 13 Overall grade of the doctorate**

The assessment of the doctorate is regulated in § 13 of the RPO.

### **§ 14 Completion of the doctorate and certificate**

The completion of the doctorate is regulated in § 14 of the RPO.

### **§ 15 Publication of the dissertation**

The publication of the dissertation is regulated in § 15 of the RPO.

### **§ 16 Withdrawal from the defense**

Withdrawal from the defense is regulated in § 16 of the ROP.

### **§ 17 Deception and revocation of the doctorate**

The procedure for cheating and withdrawal of the doctorate is regulated in § 17 of the RPO.

### **§ 18 Inspection**

Inspection is regulated in § 18 of the RPO.

### **§ 19 Appeal against decisions in the doctoral procedure**

Appeals against decisions in the doctoral procedure are regulated in § 19 of the RPO.

### **§ 20 Protection periods**

The protection periods are regulated in § 20 of the RPO.

### **§ 21 Compensation for disadvantages**

Compensation for disadvantages is regulated in § 21 of the RPO.

### **§ 22 Retention of examination documents**

The retention of examination documents is regulated in § 22 of the RPO.

### **§ 23 Doctorate in joint supervision with universities entitled to award doctorates and joint awarding of degrees**

Doctorates in joint supervision with universities entitled to award doctorates and joint degree conferral are regulated in § 23 of the RPO.

### **§ 24 Cooperative doctorates with universities not authorized to award doctorates**

Cooperative doctorates with universities that are not authorized to award doctorates are regulated in § 24 of the RPO.

### **§ 25 Entry into force**

The regulations enter into force on the day following their announcement in the Official Notices of the Graduate School for Applied Research in NRW.

Issued on the basis of the resolution of the Department council of 28.04.2023.

Wetter, 28.04.2023

The Chairman of the Department council

signed *Holzauer*

(Prof. Dr. Ralf Holzauer)

**Attachment**

Doctoral program of the Department of Resources and Sustainability

Non-official version



# Annex: Doctoral program of the Department of Resources and Sustainability

The doctoral program of the Department of *Resources and Sustainability* has a strong interdisciplinary and transdisciplinary focus. The research subjects are the various, mostly finite natural resources and the ecosystem on the one hand and communication, information, food, mobility, security and energy on the other. Sustainability is a cross-cutting issue for the department. In an integrative approach, the economic, social, cultural and economic aspects of the topic of resources are researched in order to analyze and solve societal challenges.

The program is aimed at doctoral candidates with a degree in a natural, technical, social, societal or economic field and differentiates between the content of the department's four main research areas:

1. Energy systems
2. Materials and interfaces
3. Security of supply and resilience
4. Circular economy

## **Aim of the program**

The *Resources and Sustainability* doctoral program complements and supports the individual research work carried out by Doctoral candidates in the department. It teaches additional skills that enable research work to be carried out efficiently at doctoral level. The Doctoral candidates are supported in the methodical preparation, independent development and target-group-oriented presentation of the research results achieved. In particular, special technical and methodological skills are deepened in the content of the respective research focus areas and, as far as possible, adapted to the individual research questions of the Doctoral candidates.

The specialist advice and support are designed to promote and support the early academic independence of doctoral candidates. The opportunities offered for further training promote the competence to self-reflect on the solutions developed and integration into the professional and interdisciplinary discourse. Particular attention is paid here to the interface between technical possibilities and ecological, economic and social necessities and compatibility. The cross-sectional function of sustainability helps to integrate a technology assessment into the doctoral process.

In addition, Doctoral candidates are prepared for entry into a highly qualified professional career.

Doctoral candidates are supervised by teams of experts designated in these research areas. These can also be interdisciplinary, i.e. individually composed of members from different departments of the Graduate School NRW.

## Structure/content of the program

The doctoral program *Resources and Sustainability* is designed for a period of three years and includes a compulsory area (see overview of compulsory area) and an extended voluntary area (see elective area). Further details are regulated by the supervision agreement.

### **Mandatory area**

*Overview mandatory area*

#### **First year**

- First progress meeting to conclude the supervision agreement
- Event on *Good Scientific Practice*: This event should be attended at the beginning if possible. It is offered by the PK NRW. In addition, attendance can be credited to corresponding courses in terms of topic and scope.
- Course on *ethics and responsibility in society*: This course is also offered by the PK NRW. Attendance can be credited to the corresponding course in terms of topic and scope.
- Doctoral colloquium on *resource knowledge*: Here, Doctoral candidates should present their research projects and results as part of the doctoral colloquium of the chosen research focus.

#### **Second year**

- Progress report and progress meeting, updating the time and work plan of the support agreement
- Doctoral colloquium on *resource knowledge*: Presentation of own research in the context of a doctoral colloquium of the listed research focus areas or a suitable colloquium of another department.

#### **Year freely selectable**

- Lecture series "*Fachforum Ressourcen*": The lecture series is divided into six blocks and takes place in alternating years.
- Presentation of your own research at an external scientific conference.
- Annual: progress report and discussion, update of the time and work plan of the supervision agreement

### *Explanations Mandatory area*

The year stated in the compulsory program is a recommendation. The events can also be held in a different year. The courses can also be offered and attended as online courses. A timetable and work plan is drawn up for the period of the doctorate, which sets intermediate goals and milestones. The time and work plan is an annex to the supervision agreement, which is concluded individually with the doctoral candidate. In addition to the regular academic exchange, a meeting between the doctoral candidate and the supervision team takes place at

least once a semester. At this meeting, it is checked and documented whether the agreed timetable has been realized or is feasible and whether it is being adhered to.

A written progress report must be prepared once a year. In addition, the further procedure is discussed and documented. Further details are regulated in the supervision agreement.

The courses on good scientific practice and ethics and responsibility in society are generally offered across departments.

### ***Elective area***

#### *Participation in meetings and conferences*

As part of the doctorate, participation in symposia and scientific conferences (in addition to the mandatory presentation) is supported. At the advanced stage of the doctoral project, participation should be linked to the presentation of your own contribution (poster, lecture or workshop).

#### *Publications*

As part of the doctoral project, contributions on the dissertation topic should be published in relevant specialist journals or conference proceedings. The specification of the publications in terms of number and publishing medium will be coordinated and documented with the supervisors. The supervisors will provide technical and organizational support for the preparation of the publications.

#### *Extracurricular qualifications*

During the doctorate, the development of extracurricular qualifications is promoted. These include networking activities, interdisciplinary workshops, workshops on personal and professional development (to acquire professional non-scientific skills).

#### *Stays abroad*

Stays abroad to acquire further knowledge on the doctoral topic, to expand foreign language skills, to learn special or new methods and to maintain contact with cooperation partners are funded if they support the doctoral project. Funding for the stay abroad will be agreed on a case-by-case basis (scholarship, third-party funding, etc.).

### ***Scheduling***

In the first year, the focus is on narrowing down the dissertation topic within the framework of an exposé and the preparation of initial results. The research project should be presented towards the end of the first year in the doctoral colloquium or additionally at workshops and conferences. At the same time, publications should be made in specialist journals (peer-reviewed) or at relevant conferences (peer-reviewed).

### ***Courses of the Department for doctoral candidates***

The following events are regularly offered to support doctoral candidates:

#### *Doctoral colloquium on resource knowledge*

The department will organize four colloquia per year in accordance with the four research focus areas and offer Doctoral candidates the opportunity to present procedures, interim results and/or new developments of the doctoral projects in the addressed research focus areas with professors and Doctoral candidates with a similar subject and thematic focus.

#### *Lecture series on resources*

The aim of the lecture series *Fachforum Ressourcen* is to discuss the latest developments and trends in the department's subject areas with Doctoral candidates and changes its focus every year. The core components are expert lectures from the department's four main research areas. These are embedded in a corresponding introductory event and a synthesis of the content discussed in a closing event. The lecture series is divided into six blocks as follows:

- Introductory event: communication/discussion of the current state of knowledge
- *Energy systems*: e.g. "The transformation of the energy system - from the use of renewable energies and their sustainability potential"
- *Materials and interfaces*: e.g. "Solutions to global challenges such as climate change, resource conservation and the energy transition"
- *Security of supply and resilience*: e.g. "Securing the livelihoods of tomorrow"
- *Circular economy*: e.g. "Links between anthropogenic material flows and technical material cycles"
- Closing event: Synthesis

Where possible, the department offers additional events, e.g:

#### ***Regional Sustainability Summer School***

Here, interdisciplinary qualification workshops, method workshops and in-depth specialist events on a changing topic are combined.

In-depth course on methods and other specialist in-depth courses

#### *Further specialist in-depth courses*

Examples of this are

- (Statistical) design of experiments and multi-criteria system optimization
- Energy systems of the future
- Sustainability of technical systems
- Process analysis technology for atline, online and inline monitoring
- Cross-sector energy systems

- Optimization of energy systems
- Technologies and social innovations for adapting natural ecosystems and production systems to climate change
- Development and evaluation of processes to improve the security and resilience of value and supply chains
- Polymer physics/polymer materials
- Methods of statistical data analysis
- Functional materials & tools made from renewable raw materials
- Material utilization of biomass
- Ensuring the performance of environmental, social and technical systems

Once a year, the Department council decides on the optional events to be attended.

Non-official version