

# **SUPPLEMENTARY REGULATIONS FOR THE PhD DEGREE IN MATHEMATICS EDUCATION AT THE UNIVERSITY OF AGDER**

*Adopted by the Board of Agder University College on 19 February 2003, as amended on 17 December 2003, pursuant to the Regulations for the degree of Philosophiae Doctor (PhD) at the University of Agder.*

**The clauses below refer to corresponding sections of the *Regulations for the degree of Philosophiae Doctor (PhD) at the University of Agder.***

## **2 Admission**

### **2.1 Applicants' formal qualifications**

#### **2.1.1 Education**

Applicants for the doctoral degree programme must normally hold a *cand.scient.* or *siv.ing.* degree or a Master's degree from a Norwegian university or college. An applicant may be admitted to the doctoral degree programme on the basis of an individual evaluation without such a degree provided that s/he can document equivalent qualifications.

Applicants with other qualifications or with a degree in a different subject area than mathematics education may be required to take a special test before admission, or to meet special requirements with respect to the training programme as a prerequisite for admission.

Applicants who have taken their education at a foreign institution may be required to submit documentary evidence of the level of their education compared with Norwegian higher education.

#### **2.1.2 Level**

In general, an applicant should not be considered for admission to the doctoral degree programme if the applicant has achieved an average mark below B in his or her undergraduate area of specialisation or master's degree courses or equivalent (60 credits), or on the master's degree thesis or equivalent. Guidelines for the evaluation of results in numerical marks or a combination of numerical marks and letter marks shall be stipulated by the faculty.

### **2.2 Plan for the doctoral degree programme**

Applications for admission are to be written on a special form. A summary of the project description may be submitted together with the application, provided that a full project description is prepared within 6 months, at the latest, after admission.

### **2.3 Admission procedure**

Applications for admission will be decided by the faculty board on the basis of a report from the faculty research education committee. The research education committee must ensure that a suitable supervisor and necessary material resources are available.

## **3. Agreement**

An agreement is to be signed by the candidate, the supervisor(s) and the faculty. Major changes in subject matter of the agreement shall be approved by the faculty on the basis of an opinion from the research education committee.

## **4. Organised training component**

#### **4.1 Normal time frame**

The organised training component shall comprise an approved 60-credit theoretical and possibly practical course of study, of which the obligatory trial lecture in connection with the disputation will count five credits.

#### **4.2 The organised training component**

The course shall normally include both a special reading list and participation in seminars. The content must, together with the work on the dissertation, give the required depth and overall perspective with a view to meeting the objectives of the doctoral degree programme.

A 55-credit theoretical component shall be as follows:

##### **A 35-55 credits**

Courses and a special reading list form the basis of written and/or oral examinations.

The course entitled Philosophy of Science from the perspective of Mathematical Education, including Ethics (5 credits), and Research Design and Research Methodology for Mathematics Education (10 credits) are obligatory.

At least one course in the history of mathematics shall be included in the theoretical part of the *cand.scient, siv.ing.* or master's degree, or in the doctoral programme.

In addition, a special reading list comprising specialist literature or methodology relevant to the dissertation may be included, followed by an essay equivalent to a 5-credit course. The essay is to be approved by the supervisor.

Moreover, at least 20 credits shall be obtained through ordinary courses at master's degree or doctoral degree level, such as:

- courses from the master's or doctoral degree programme in mathematics at this faculty
- equivalent courses taught at other faculties or outside the University of Agder
- national and/or international research courses approved by the relevant research group with respect to scope and level

A maximum of 10 credits at master's degree level may be approved.

In the event that certain undergraduate level courses are deemed necessary as a basis for other courses or for the dissertation, any such courses must be taken in addition to the 55-credit framework.

Examinations in the theoretical courses will be assessed as pass or fail, and a pass is equivalent to a mark of B or better.

In the event that previous examinations are to be included as a part of the theoretical component, documentary evidence is required that satisfactory results have been achieved. Examinations which at the time of admission are more than five years old, can normally not be included in the theoretical component.

## **B 0-20 credits**

This part is composed of one or several of the sections below and shall normally be completed after admission to the doctoral degree programme.

- (a) research course  
This category may include various courses with particular credit requirements. They are intensive and have no approved examination form as required for courses under A. Summer school as well as national and international research courses may be included. One-week courses with individual reporting give 3 credits.
- (b) Periods of study or research at other institutions, normally abroad, to learn methodology, etc, give 3 credits per month. Such periods are to be documented by means of a written report to the research education committee. Maximum 5 credits.
- (c) Participation at international conferences with presentation of the candidate's own research results may give 3 credits per conference. Maximum 5 credits.
- (d) Comprehensive activities related to popular science. Maximum 5 credits.
- (e) Lecturing/leading seminars on a prescribed topic, given approximately 3 weeks prior to the lecture/seminar, with seminar notes, count 3 credits. A seminar gives a maximum of 5 credits.
- (f) Publications. An article prepared for a journal gives 2 credits, and if accepted in a journal with a referee system, 5 credits.

Other equivalent activities may be approved by the research education committee. For the calculation of credits for activities other than those mentioned above, the standard is 30 credits per semester (18 weeks) so that 5 credits correspond to a workload of 3 normal weeks.

Documentary evidence must be provided for activities under B in which the candidate has participated.

In the event that the candidate has failed one of the partial examinations of the organised training programme, he or she may try again in the following semester, at the earliest. All examinations must have been taken no later than one month before the disputation.

Courses taken previously by the candidate at the University of Agder or at other institutions cannot be included in the theoretical component.

### *Half-year report*

Six months before the planned date for the disputation, the supervisor(s) and the candidate are to submit to the research education committee all required documentation of the activities completed under the organised training component. In the event that not all activities have been completed, the doctoral candidate shall submit a plan for the completion of the training component.

Approval of the training component shall be decided by the research education committee. The doctoral candidate shall be informed of the committee's decision.

### **4.3 Supervision**

The doctoral degree programme is a supervised research education programme, which means that the candidate should stay at the university college during the greater part of the course of study unless otherwise required due to special circumstances.

The faculty shall appoint a supervisor on the basis of a proposal from the research education committee.

The research education committee is responsible for the quality assurance of the doctoral degree programme. The candidate and the supervisor shall prepare an annual progress report in accordance with the guidelines from the research education committee.

### **5. Dissertation**

The main results in the dissertation shall be available for publication. The candidate and the supervisor are responsible for taking publication requirements into consideration when selecting research project. The dissertation shall meet international standards and be at a high academic level with respect to problem statement and definitions of concepts as well as methodological, theoretical and empirical basis, documentation and presentation form.

Dissertations consisting of several parts shall include a summary which outlines and possibly elaborates on the issues and conclusions in each of the parts and points towards expected results from future work in the area. The summary will thus form an important part of the dissertation for both the doctoral candidate and those who are to evaluate his or her qualifications as a researcher.

### **6. Submission of the dissertation**

The doctoral candidate shall submit an application for evaluation of the dissertation by the faculty via the research education committee, together with 5 copies of the dissertation. If the dissertation is approved for defence, another 25 copies of the dissertation must be submitted.

### **7. Nomination of evaluation committee**

An evaluation committee, including opponents, shall be nominated on the basis of proposals from the research education committee. At least two members shall be without affiliation with the University of Agder.

### **8. Committee report and further procedure**

The report from the evaluation committee shall be considered by the faculty board on the basis of a report from the research education committee. The Dean may approve a committee report when an unanimous committee concludes that the doctoral candidate may be given permission to defend his or her dissertation.

### **9. Trial lecture and public defence**

The doctoral degree programme shall be concluded with a trial lecture and public defence. The trial lecture shall be held in connection with the public defence, and shall be evaluated by the evaluation committee.