

## **The credit system of the István Sályi Doctoral School of Mechanical Engineering**

### **1. Introduction**

The training system aims to assist students in preparing their dissertations, acquiring up-to-date knowledge and developing research skills by placing

1. placing great emphasis on natural sciences and professional foundations,
2. offering a wide range of subject groups,
3. providing a wide selection of subjects that provide the knowledge necessary for in-depth research into the topic
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4. operating a Doctoral School Scientific Seminar, where doctoral students have the opportunity to present the professional materials assigned by their supervisor after processing them, present them, focusing on their essence and the possibility of further development (all doctoral students of the school and the supervisors of the reporting doctoral students must participate in the work of the Seminar),
5. expecting independent research work, it requires the submission of a detailed written report each year on the progress of the thesis, with the possibility of discussing the material in a professional forum,
6. supports publication requirements by organising conferences and study trips abroad,
7. creates a forum for publication in university bulletins and prestigious publications,
8. limits participation in teaching to four semesters of the programme,
9. evaluates independent research work with high credit points depending on its effectiveness,
10. allows participants in individual training to be exempted from exams related to a maximum of four subjects,
11. participants in individual (correspondence) training may be exempted from participation in teaching on a case-by-case basis.

### **2. Credits that can be earned in semesters 1-4 – Training and research phase**

During the training and research phase, which comprises the first four semesters, doctoral students participate in theoretical and practical training related to their chosen topic, collect information and conduct literature research to substantiate the topic of their dissertation, create the conditions necessary to conduct their own research capable of yielding new results based on this information and research, and carry out independent work with the research background they have developed.

They report on their results through the reporting system specified by the doctoral school and through publicly available publication opportunities.

Accordingly, the credits that can be earned in this training and research phase are also related to these activities. These are detailed in the following subsections, broken down by main areas of activity.

### **2.1. Exams**

A minimum of 8 subjects must be selected. (This depends on prior education and the chosen topic. The Doctoral School Council may require the selection of additional subjects based on the recommendation of the supervisor, topic group leader or topic area leader).

In general, the compulsory subjects are

- ☐ at least 3 subjects from the natural sciences foundation,
  - ☐ at least 1 subject from the professional foundation,
  - ☐ at least 2 subjects from the subjects belonging to the professional comprehensive examination. To facilitate preparation
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- ☐ in the first semester, at least 3
  - ☐ in the second semester, at least 3
  - ☐ and at least 2 subjects in the third semester are recommended.

Courses marked with 'o' or '+' in the sample curriculum are compulsory. Each course is worth 5 credits, i.e. a total of at least 40 credits for the 8 compulsory courses.

For those without a degree in mechanical engineering, it is recommended to select the subjects *Fundamentals of Materials Science, Machine Design, Continuum Mechanics, and Thermodynamics* in addition to the requirements specified in the sample curriculum. Depending on their degree, candidates may be exempted from certain subjects upon request, based on individual consideration and the decision of the Doctoral School Council.

Based on successfully completed examinations, the required number of credits for each subject is:  
min: 40 credits.

In addition to the compulsory subjects, students may also take freely selectable subjects from among those not required in their educational programme. Two credit points may be awarded for each freely selectable subject. A maximum of two subjects may be awarded credit points for freely selectable subjects, i.e. a maximum of four points may be obtained in total.

Students may take more than two elective subjects, but no additional points will be awarded for taking more than two subjects. Elective subjects may only be taken with the consent of the supervisor, the subject group and the subject area leader.

### **2.2. Participation in education**

Recommended credits for the first four semesters (0-5) points/semester:

max. 20 points.

Departments may not prescribe teaching commitments exceeding 4 hours per week. In cases exceeding this, the supervisor must consult with the topic group or topic area leader and obtain approval from the Doctoral School Council. It must be made possible for doctoral students participating in teaching (except for observation) to perform this activity under a doctoral student contract.

### **2.3. Participation in the Doctoral School Research Seminar**

Participation in the Research Seminar regularly organised by the Doctoral School is compulsory for doctoral students. A score of 0-10 points may be awarded for each report presented at the Research Seminar. (After processing the professional materials designated by the supervisor, the student presents them at the Doctoral School Seminar, discussing their essence, critical analysis, and possibilities for further development). Doctoral students must give a minimum of two and a maximum of four research seminar presentations during the four semesters of the training and research phase. The credits available for this are:

min: 20, max. 40 points.

### **2.4. Participation in the research projects of the Department/Institute**

Doctoral students can earn (0-5) credits per semester during the first four semesters by participating in departmental research work, completing research tasks and subtasks, documenting these, and participating in tasks outside of the department's educational work that are aimed at developing the student's abilities. (The points that can be awarded are submitted to the Council for approval by experts appointed by the Doctoral School Council). Based on this, a maximum of 20 credit points can be earned by participating in departmental work.

### **2.5. Publication of the results of independent research work**

Points obtained from the presentation of the results of independent research work at conferences, symposia, etc., and from the publication of written materials in public printed publications (journals, books) (from combined publications) min. 16 points

It is advisable to publish in the most prestigious journals (preferably indexed by Scopus) and at foreign-language conferences already in the first four semesters.

### **2.6. Credit points awarded on the basis of a second language exam**

The following credit points may be awarded for successfully passing the second language exam specified in the Doctoral School's Rules of Procedure:

- Language exam conducted by the IOK (Foreign Language Education Centre): 15 credits,
- Intermediate state language exam: 20 credits
- Advanced state language exam: 25 credits.

### **2.7. Credit points that can be earned based on the completion of the complex exam**

The conditions for admission to the complex examination are set out in Section 12 of the Operating Regulations of the István Sályi Doctoral School of Mechanical Engineering. According to this, students must earn at least 90 credits during the training and research phase, including all academic credits, and must also meet the language requirements for obtaining a degree. After successfully completing the comprehensive examination, a maximum of 5 credit points may be awarded for the comprehensive report.

By successfully completing the comprehensive examination, doctoral students are entitled to proceed to the research and dissertation phase, the second 4-semester phase of doctoral training.

### **3. Credits that can be earned in semesters 5-8 – Research and dissertation phase**

In accordance with the applicable regulations, doctoral students must earn a total of 240 credits during the 8 semesters of doctoral training. In the training and research phase (semesters 1-4), the minimum 90 credits required for the comprehensive examination and the 5 credits awarded for successfully completing the comprehensive examination add up to a minimum of 95 credits. Of course, the actual credits earned may significantly exceed this value by exceeding the publication requirements and fulfilling the language requirements for obtaining a degree. However, based on the minimum requirements, doctoral students must earn an additional 125 credits in the second 4-semester research and dissertation phase to meet the minimum requirement of 240 credits for the entire 8-semester programme.

Since doctoral students basically carry out research work, publish their research results, report on the completion of their research work and prepare their thesis suitable for academic workshop discussion during the second four-semester research and dissertation phase, the necessary credits must be obtained from these activities; study credits can no longer be obtained at this stage.

The following subsections describe the credits that can be earned for these main activities.

#### **3.1. Participation in the Doctoral School Research Seminar**

Participation in the Research Seminar regularly organised by the Doctoral School is also mandatory for doctoral students at this stage. A score of 0-10 points can be awarded for each report presented at the Research Seminar. (After processing the professional materials designated by the supervisor, the student presents them at the Doctoral School Seminar, discussing their essence, critical analysis, and possibilities for further development). Doctoral students must give a minimum of two and a maximum of four research seminar presentations during the four semesters of the research and dissertation phase. The credits available for this are:

min: 20, max. 40 points.

#### **3.2. Participation in the research projects of the Department/Institute**

Doctoral students can earn (0-5) credits per semester in the second four semesters by participating in departmental research work, completing research tasks and subtasks, documenting these, and participating in documented tasks outside of the department's educational work aimed at developing the student's abilities. (The points that can be awarded are submitted to the Council for approval by

experts appointed by the Doctoral School Council ). Based on this, a maximum of 20 credit points can be earned by participating in departmental work.

### **3.3. Research reports**

At this stage, it is particularly important for doctoral students to regularly summarise their research work in writing, producing a 15-25 page written report every semester, which is assessed by their supervisor. The reports are approved by the Doctoral School Council, which determines the credit value of the report within a range of 0-15 credits.

A maximum of 15 points per semester can be earned, for a total of 45 credit points over three semesters (5th, 6th and 7th semesters).

### **3.4. Participation in teaching**

Based on participation in the teaching activities of the department/institute, (0-5) credit points may be awarded per semester, for a total of:

max. 20 points.

Departments may not prescribe teaching commitments exceeding 4 hours per week. In cases exceeding this, the supervisor must consult with the head of the subject group or subject area and obtain approval from the Doctoral School Council. Doctoral students participating in teaching (except for observation) must be allowed to perform this activity under a doctoral student contract.

During the research and dissertation phase, in the 7th and 8th semesters, an exemption from this activity may be granted.

### **3.5. Publication of research results**

Doctoral students shall present the results of their research work at conferences, symposia, etc. and publish them in the form of written materials in public printed publications (journals, books) (points received from combined publications) min. 20 points, which together with the min. 16 points from the training and research phase makes a total of 36 points.

At this stage, it is particularly important to publish the results achieved in the most prestigious conferences and journals and to have the results achieved objectively evaluated. The credit points available for publication activities are listed by publication type in Appendix 1 of the Doctoral School Regulations.

### **3.6. Credit points that can be awarded based on the workshop discussion of the doctoral dissertation**

The completed thesis must be submitted to a scientific workshop organised by the professionally competent organisational unit at least one month before the thesis is submitted. Following a successful workshop, credit points may be awarded based on the recommendation of the chair of the workshop:

max. 20 points.

#### 4. Further interpretations related to the credit system

##### 4.1. Minimum number of credit points required to obtain a certificate of completion: 240 points

Of the 240 points, the minimum number of points required for publications related to independent research (15% of 240 points, i.e. a minimum of 36 points) must be achieved, and the doctoral student must also fulfil the other requirements and successfully participate in seminars. In the case of individual preparation, the total publication output must not be less than that of those participating in organised training.

##### 4.2. An absolutorium is required to initiate the doctoral procedure

##### 4.3. The minimum publication requirement must also be met in order to submit the dissertation

In order to submit a dissertation, the candidate must have at least **four publications**, of which

- **at least two of these are in a foreign language**, with the candidate having contributed at least 50% to them,
- and **at least one of these must be a peer-reviewed article in a foreign language**, also with at least 50% participation by the candidate. (The supervisor may be omitted from the evaluation of co-authors.)
- **At least one peer-reviewed Hungarian** journal article or conference publication. A peer-reviewed journal is one that has
  - has an editorial board,
  - has a foreign-language summary in one of the world languages,
  - and the published article has at least one reviewer who has prepared a written opinion.
- In the case of conference publications, the following requirements must be met
  - the presentation must be included in its entirety,
  - the publication must have an ISBN or ISSN number,
  - A one-page abstract does not count as a conference publication.
  - in the case of peer-reviewed material, the author must receive feedback from the conference organisers regarding the peer review and the acceptance of the material to be published,
- at least one of the peer-reviewed journal articles or conference materials must have been published in a journal or publication indexed by Scopus.

The following page summarises the credit requirements for the two stages of doctoral training in a clear table format.

***Training and research phase (first 4 semesters)***

<b>Description</b>	<b>Credits</b>	<b>Comments</b>	<b>Credits available</b>
Compulsory subjects	5 credits/subject	max. 8 subjects	40 credits
Elective subjects	2 credits/subject	2 subjects	4 credits
Research seminar	0-10 credits/semester	max. 4 per semester	min. 20 credits, max. 40 credits
Departmental research	0-5 credits/semester	max. 4 per semester	max. 20 credits
Annual research reports on the doctoral student's topic	0-10 credits/semester	At the end of the 2nd and 4th semesters	max. 20 credits
Teaching activities	0-5 credits/semester	max. 4 semester	max. 20 kr
Complex examination			5 kr
Minimum publication requirement	See István Sályi Doctoral School Operating Regulations Appendix 1		min. 16 credits

***Research and dissertation phase (second 4 semesters)***

<b>Description</b>	<b>Credits</b>	<b>Comments</b>	<b>Credits available</b>
Research seminar	0-10 credits/semester	max. 4 per semester	max. 40 credits
Departmental research	0-5 credits/semester	max. 4 per semester	max. 20 credits
Semester research reports	0-15 credits/semester	5th, 6th and 7th at the end of the semester	max. 45 credits
Teaching activities	0-5 credits/semester	max. 2 per semester	min. 10 kr, max. 20 kr
Minimum publications	See István Sályi Doctoral School Operating Regulations Appendix 1		min. 36 credits

Dissertation workshop			max. 20 credits
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