

Introduction for new doctoral students at the Department of Physics

meeting 2020-10-12

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You will meet:

- Lena Falk
 - Vice Head of Department, Quality and Infrastructure of Doctoral Programmes
 - Director of Studies, the Graduate School in Materials Science
- Christophe Demaziere
 - Director of Studies, the Graduate School in Nuclear Engineering
 - Director of Studies, the Graduate School in Physics
- Jan Swenson
 - Director of Studies, the Graduate School in Physics
- Anna Lindqvist
 - Administrator, graduate education at the Department of Physics
- Sara Nilsson
 - Physics PhD student council

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The purpose of this meeting

- Introduce new doctoral students to
 - rules of procedure - doctoral programmes at Chalmers
 - established practice - doctoral programmes at Physics
- Discuss qualifications descriptors
 - degree of licentiate
 - degree of doctor of philosophy



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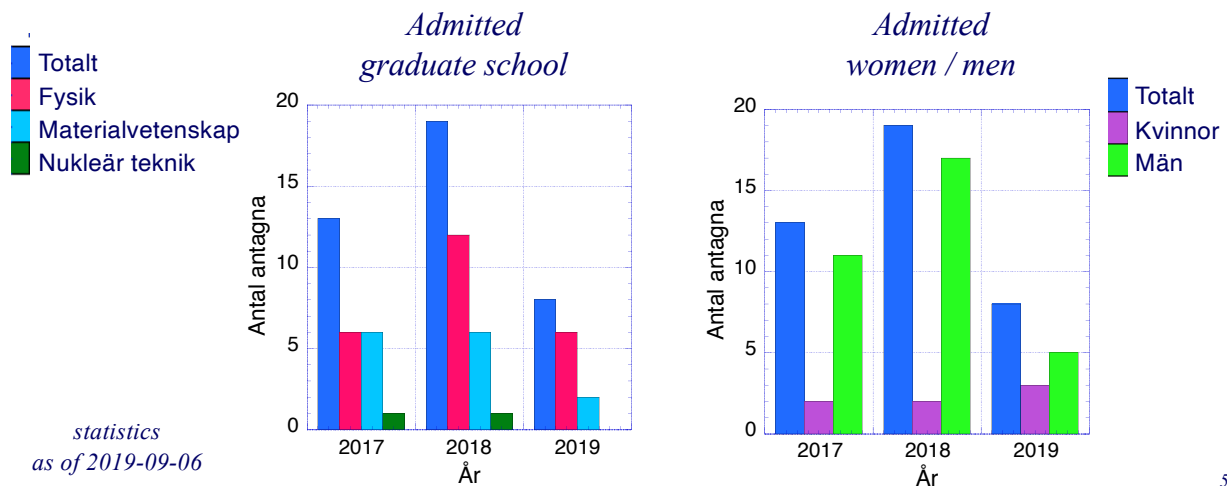
Agenda

- The doctoral programmes at the Department of Physics
- Qualifications descriptors for third cycle qualifications
 - Degree of Licentiate
 - Degree of Doctor of Philosophy (PhD)
- The doctoral student position (doktorandtjänst)
- Roles and responsibilities in doctoral studies at Chalmers
- Follow-up of the doctoral student's studies
- Tools for introduction and follow-up of doctoral students
 - The individual study plan (ISP)

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Statistics

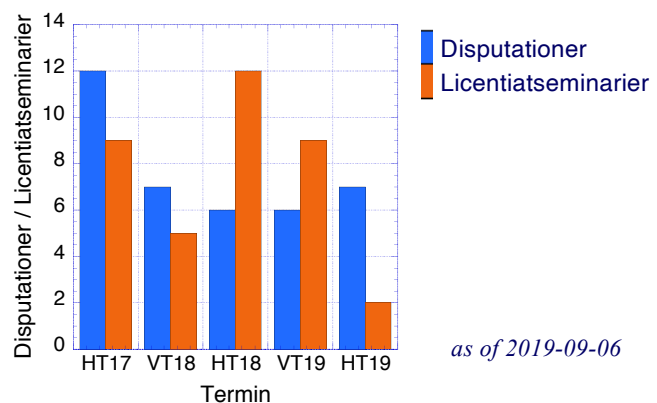
- number of doctoral students at the Department of Physics (2020-10-09): 73
 - the Graduate School in Physics: 48 doctoral students
 - the Graduate School in Materials Science: 20 doctoral students
 - the Graduate School in Nuclear Engineering: 5 doctoral students
- number of doctoral students admitted in 2020: 19 (7 women, 12 men)



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Doctoral thesis defences and licentiate seminars

- licentiate seminar / licentiate degree
 - mandatory at Physics
 - 2.3 – 2.7 years after admission to a doctoral programme
- doctoral thesis defence / doctoral degree
 - 4 – 5 years after admission to a doctoral programme
- 2020 VT
 - 5 licentiate seminars
 - 10 doctoral theses defences
- 2020 HT
 - 5 licentiate seminars
 - 7 doctoral theses defences



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Doctoral Programmes at the Department of Physics

- three graduate schools
 - the Graduate School in **Physics**
 - directors of studies: Christophe Demaziere, Jan Swenson
 - the Graduate School in **Materials science**
 - director of studies: Lena Falk
 - the Graduate School in **Nuclear engineering**
 - director of studies: Christophe Demaziere
- graduate school syllabus (allmän studieplan, ASP)
 - <https://intranet.chalmers.se/om-chalmers/organisation/forskarutbildning/forskarutbildningsorganisation/>

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Qualifications descriptors for third-cycle qualifications

- The higher education ordinance (Högskoleförordningen), appendix 2
- Lokal examensordning för Chalmers - examina på forskarnivå
 - the Degree of Licentiate
 - scope: at least 120 credits
 - expected outcomes
 - Knowledge and understanding
 - Competence and skills
 - Judgement and approach
 - licentiate thesis
 - the Degree of Doctor
 - scope: 240 credits
 - expected outcomes
 - Knowledge and understanding
 - Competence and skills
 - Judgement and approach
 - doctoral thesis



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Knowledge and understanding

Licentiate degree

- the doctoral student shall
 - *demonstrate knowledge and understanding* in the *field of research* including current specialist knowledge in a limited area of this field
 - *demonstrate specialised knowledge of research methodology* in general and the methods of the specific field of research in particular

Doctoral degree

- the doctoral student shall
 - *demonstrate broad knowledge and systematic understanding* of the research field as well as advanced and *up-to-date specialised* knowledge in a limited area of this field
 - *demonstrate familiarity with research methodology* in general and the methods of the specific field of research in particular

Competence and skills

Licentiate degree

- the doctoral student shall
 - *demonstrate* the ability to identify and formulate issues with scholarly precision critically, autonomously and creatively, and to plan and use appropriate methods to undertake a limited piece of research and other qualified tasks within predetermined time frames in order to contribute to the formation of knowledge as well as to evaluate this work

Doctoral degree

- the doctoral student shall
 - *demonstrate* the *capacity* for *scholarly analysis and synthesis* as well as to review and assess new and complex phenomena, issues and situations autonomously and critically
 - *demonstrate* the *ability to identify and formulate* issues with scholarly precision critically, autonomously and creatively, and to *plan and use appropriate methods* to undertake research and other *qualified tasks* within *predetermined time frames* and to *review and evaluate* such work

Licentiate degree

- the doctoral student shall
 - *demonstrate* the ability in both national and international contexts to present and discuss research and research findings in speech and writing and in dialogue with the academic community and society in general
 - *demonstrate* the skills required to participate autonomously in research and development work and to work autonomously in some other qualified capacity

Doctoral degree

- the doctoral student shall
 - *demonstrate* **through a dissertation** the **ability to make a significant contribution** to the **formation of knowledge** through his or her **own research**
 - *demonstrate* the **ability** in both national and international contexts to **present and discuss research** and research findings authoritatively in speech and writing and in dialogue with the academic community and society in general
 - *demonstrate* the **ability** to **identify the need for further knowledge**
 - *demonstrate* the **capacity** to **contribute to social development** and **support the learning of others** both through research and education and in some other qualified professional capacity

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Judgement and approach**Licentiate degree**

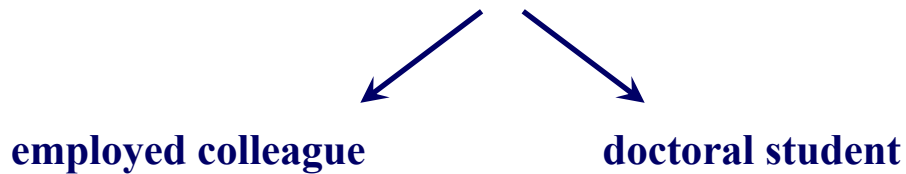
- the doctoral student shall
 - demonstrate the ability to make assessments of ethical aspects of his or her own research
 - demonstrate insight into the possibilities and limitations of research, its role in society and the responsibility of the individual for how it is used
 - demonstrate the ability to identify the personal need for further knowledge and take responsibility for his or her ongoing learning

Doctoral degree

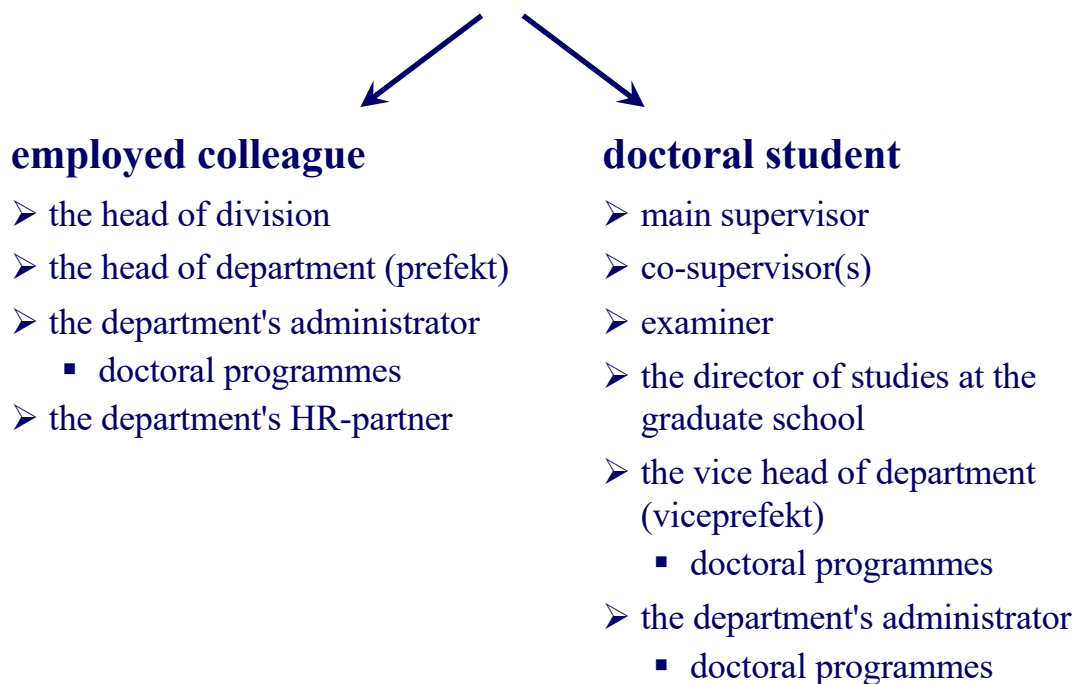
- the doctoral student shall
 - *demonstrate* **intellectual autonomy** and **disciplinary rectitude** as well as the **ability to make assessments of research ethics**
 - *demonstrate* **specialised insight** into the **possibilities and limitations of research**, its role in society and the responsibility of the individual for how it is used

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Doctoral student position (doktorandtjänst) at Chalmers



Doctoral student position (doktorandtjänst) at Chalmers



The role of the main supervisor

- draw up an individual study plan together with the doctoral student after consultation with the student's examiner
- give qualified supervision
- participate in the doctoral student's follow-up meetings with the director of studies at the graduate school
- assess, together with the examiner, the doctoral student's capacity for reaching the degree
- approve, together with the examiner, that the doctoral thesis is printed

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The role of the examiner

- approve the doctoral student's individual study plan
- participate in the doctoral student's follow-up meetings with the director of studies at the graduate school
- assess, together with the main supervisor, the doctoral student's capacity for reaching the degree
- sign the written request for the doctoral students licentiate seminar
- approve (after consultation with the main supervisor) the doctoral student's licentiate thesis
- approve the licentitate seminar
- sign the written request for the doctoral student's thesis defence
- approve, together with the main supervisor, that the doctoral thesis is printed

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The role of the director of studies

- support the doctoral student, the supervisors and the examiner
- call and chair follow-up meetings with the doctoral students at the graduate school
- take the initiative in calling for extra follow-up meetings in case of insufficient progression
- inform the Vice Head of Department in case of insufficient progression
- guarantee that the doctoral students (revised) individual study plan (ISP) is signed and archived at the department
- be active in reviews of the graduate school
- contribute to different activities at the graduate school

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The doctoral student's employment and education

- doctoral student position (doktorandtjänst) at Chalmers
 - an individual education combined with an employment
 - doctoral student and employed colleague
 - time of appointment
 - in total 48 study months effective time
 - 1 year + 2 years + max 2 years
 - the length of the third employment agreement depends on the amount of department duties, e.g. teaching
 - » maximum 20 % of full time
 - may be further prolonged because of
 - » parental leave, leave of absence because of illness, leave of absence for service in the defence forces, or an elected position in a trade union or student organisation
 - teaching
 - talk to the Director of Undergraduate Studies at the Department of Physics
 - Jakob Welander (jakob.welander@physics.gu.se)
 - Talk to course examiner/teacher

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The doctoral student's employment and education, *cont.*

- doctoral students not employed by Chalmers
 - industrial research students
 - employed by a company
 - doctoral student position at an other university than Chalmers
 - in total 48 study months effective time

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The activity of the doctoral student

- activity
 - the percentage of full time that is devoted to the own research project and course work
 - takes department duties (e.g. teaching), parental leave, periods of illness (sjukskrivning), VAB, military service, elected positions in trade unions or student organisations into consideration
 - reported to Statistics Sweden (SCB)
- Example: one calendar year (e.g. 2019)
 - total number of working hours per year (full time) = 1756
 - ≤ 29 years old: 1756 hours/year; 30-39 years old: 1732 hours/year;
 - > 40 years old: 1700 hours/year
 - total number of teaching hours during the year = 153
 - corresponds to 8.7 % of full time
 - activity = $(100 - 8.7) \% = 91.3 \%$

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Activity and study months

➤ activity during one calendar year

- 91.3 %
 - corresponds to 11 study months
 - percentage of doctoral education completed during the year
 - $11/48 \times 100 \% = 22.9 \%$

➤ Example: estimated date for doctoral thesis defence

- admission to the graduate school on September 1, year 1
- no department duties (teaching) year 1 and 5

	Year 1	Year 2	Year 3	Year 4	Year 5
activity	33.3	91.3	91.3	91.3	92.8
study months	4	11	11	11	11
% completed	8.3	22.9	22.9	22.9	23.0

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Activity during one term

➤ SCB wants to know your activity during two six months periods per year

- January - June (VT)
- July - December (HT)

➤ Example: calculation of activity during a six months period

- total number of working hours = $0.5 \times 1756 = 878$
- teaching and other department duties = 55 hours
 - corresponds to 6.3 % of full time during the six months period
- activity reported to SCB
 - deduct percentage of full time for illness, VAB, etc during the six months period
 - a total of 1 month = 16.7 % of full time during the six months period
- activity = $(100 - 6.3 - 16.7) \% = 77 \%$

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Support from the administration

- Administration of employment agreements
- Archiving of individual study plans (ISP)
- Ladok
 - Create transcript of records
 - <https://intranet.chalmers.se/en/tools-support/doctoral-studies-support/during-your-doctoral-studies/certificates-and-transcript-of-records/>
 - Registration of courses
 - Chalmers courses with a code, for example master or GTS courses
 - Department in charge of the course responsible for the registration
 - Transferred courses - e.g. master courses from previous studies, courses from other universities, summer schools etc.
 - Examiner responsible for the registration
 - Activity and financing - reported twice a year

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Support from the administration, *cont.*

- Administration around licentiate seminars and doctoral thesis defences
 - Information and time schedules on Physics homepage
 - Date and time
 - check with the administrator
 - Written request
 - licentiate seminar – at latest 6 weeks in advance
 - doctoral thesis defence – at latest 4 months in advance
 - Preview of doctoral theses
 - Distribution list for licentiate and doctoral theses
- Apply for licentiate and doctoral degree certificates
 - Chalmers intranet
 - Doctoral studies support
 - <https://intranet.chalmers.se/en/tools-support/doctoral-studies-support/>

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COFFEE BREAK



We will start again in 10 minutes.

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Graduate studies -- tools för introduction and follow-up

- the **six months project**
 - the graduate student is actively working on her/his research project directly after admission to the graduate school
 - first six months of graduate studies
- the doctoral student's **individual study plan (ISP)**
- the **Professional and personal development tool**
 - the graduate student gets support in developing different skills
- a tool for supervisors and doctoral students: **Agree on how to work together**
 - reach an agreement between the doctoral student and the main supervisor
 - expectations
 - responsibilities
 - collaboration
 - first month of graduate studies
 - requires continuous revision during the research education

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The doctoral student's individual study plan (ISP)

- the Higher Education Ordinance (Högskoleförordningen), 6 kap, 29 §

An individual study plan **shall be drawn up** for each doctoral student. This plan shall contain the **undertakings made by the doctoral student and the higher education institution** and **a timetable for the doctoral student's study programme**.
The individual study plan **shall be reviewed regularly** and amended by the higher education institution to the extent required after consultation with the doctoral student and his or her supervisors.

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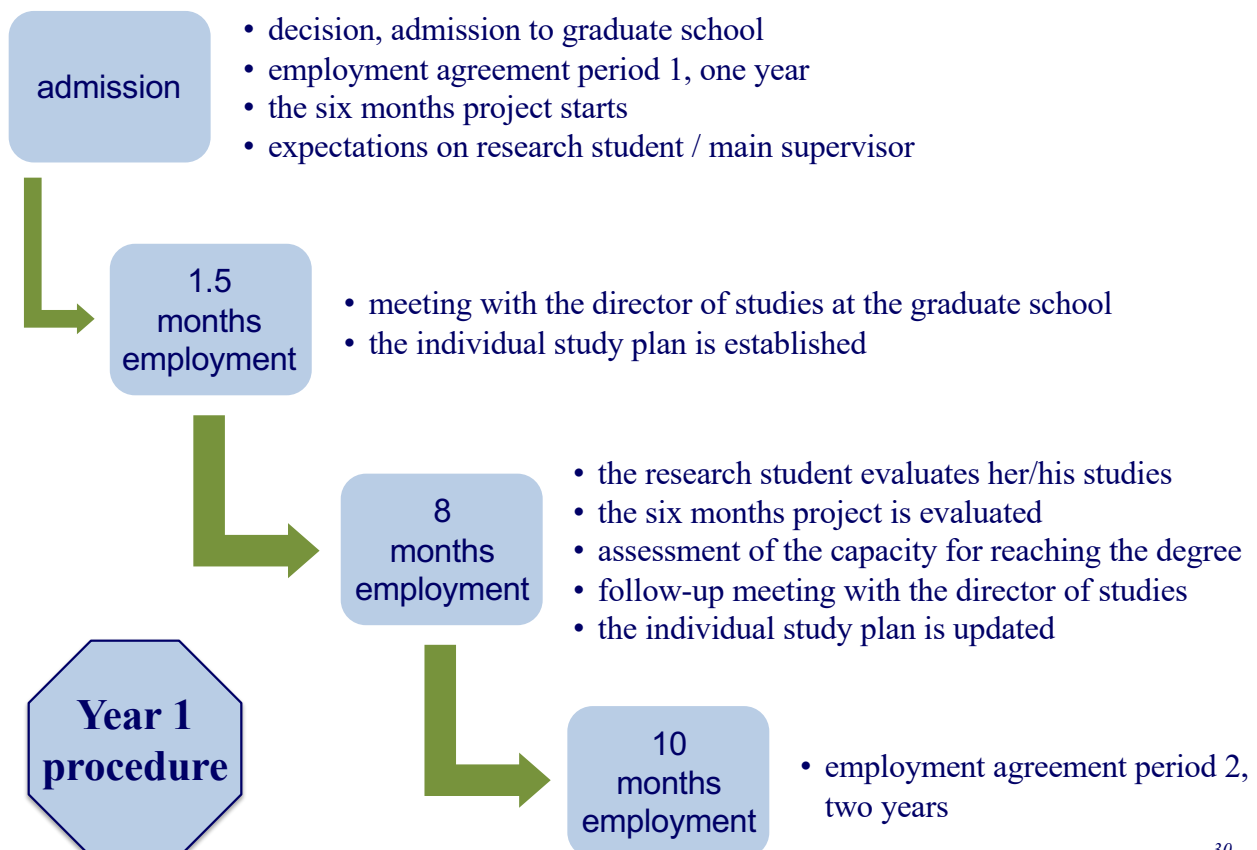
The doctoral student's individual study plan (ISP)

➤ Appointment regulation for doctoral programmes

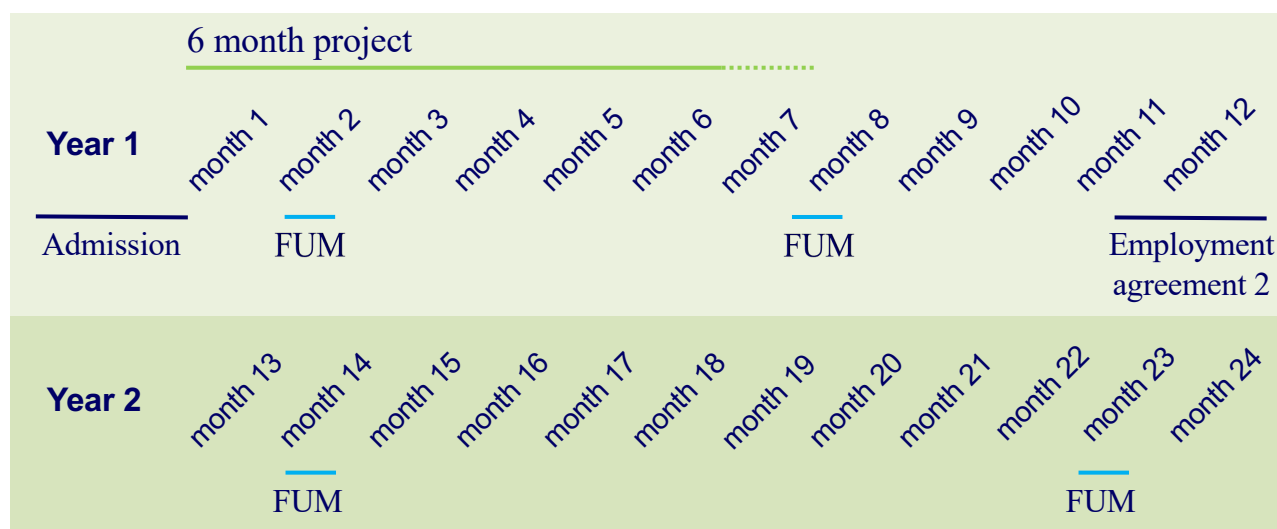
- Policy document at Chalmers
- **4.2 Individual syllabus and study follow-up**

Each doctoral student shall have an individual study plan that presents the planned and completed parts of the doctoral programme. The study plan serves as a guiding instrument for the entire programme and ensures that the studies are conducted and followed up effectively. The study plan shall contain the undertakings of both Chalmers and the doctoral student.

The individual study plan shall contain a timetable for the thesis work, which other elements are included, and the scope in higher education credits.



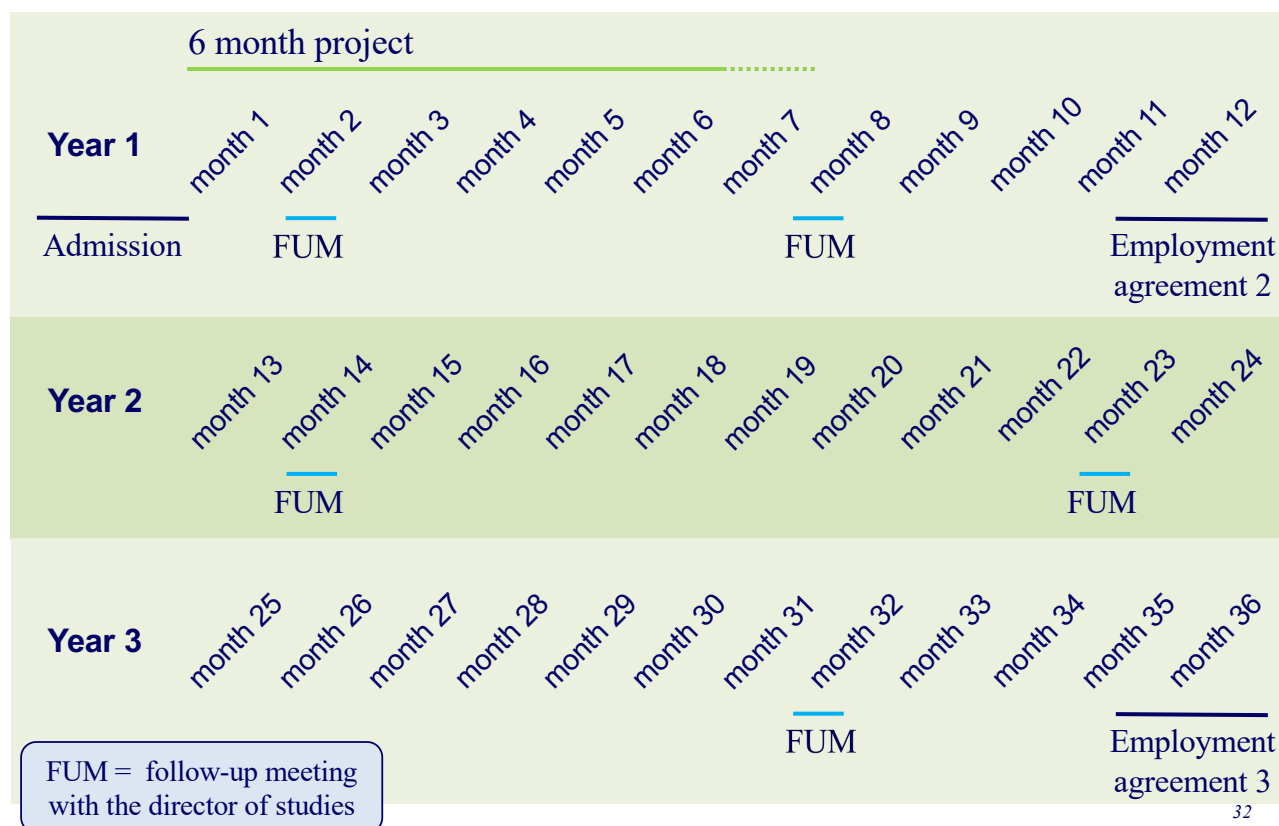
Schedule for the follow-up of the doctoral studies year 1 and 2



FUM = follow-up meeting
with the
director of studies

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Schedule for the follow-up of the doctoral studies year 1 to 3



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Schedule for the doctoral student's follow-up meetings

Year 1	month 1	<u>month 2</u>	month 3	month 4	month 5	month 6	<u>month 7</u>	month 8	month 9	month 10	month 11	month 12
Year 2	month 13	<u>month 14</u>	month 15	month 16	month 17	month 18	month 19	month 20	month 21	month 22	<u>month 23</u>	month 24
Year 3	month 25	month 26	month 27	month 28	month 29	month 30	<u>month 31</u>	month 32	month 33	month 34	month 35	month 36
Year 4	month 37	month 38	month 39	<u>month 40</u>	<u>month 41</u>	<u>month 42</u>	<u>month 43</u>	<u>month 44</u>	month 45	month 46	month 47	month 48
Year 5	<u>month 49</u>	<u>month 50</u>	<u>month 51</u>	<u>month 52</u>	<u>month 53</u>	<u>month 54</u>	<u>month 55</u>	<u>month 56</u>	<u>month 57</u>	<u>month 58</u>	<u>month 59</u>	<u>month 60</u>

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The follow-up meeting

- the director of studies
 - is responsible for calling the meeting
 - chairs the meeting
- present at the meeting
 - the doctoral student
 - the main supervisor
 - the examiner
 - the co-supervisor(s)
 - the director of studies
- format of the meeting
 - the doctoral student meets the director of studies (15 minutes)
 - the supervisors and the examiner join the meeting (30 minutes)
 - the supervisors and the examiner meet the director of studies (15 minutes)

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The doctoral student's individual study plan (ISP)

- an updated version of the ISP is discussed at the follow-up meetings with the director of studies at the graduate school
- the ISP form and the three attachments that go with it are available for downloading at
 - <https://intranet.chalmers.se/verktyg-stod/forskarutbildning/under-forskarutbildningen/studieuppfoljning-och-individuell-studieplan/>
 - under the heading:
"Individuell studieplan och uppföljningsmöten på Fysik"
- ISP - the pdf document and how you fill it in and use it
 - use Acrobat Reader or Acrobat Pro in order to retain the functionality of the document

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The individual study plan (ISP) - responsibilities

- **establish** the ISP
 - the doctoral student and the main supervisor in consultation with the examiner
- **update** the ISP
 - the doctoral student
- **follow-up** of the doctoral studies and the ISP
 - the director of studies at the graduate school
- **archive** the signed ISP
 - the administrator for doctoral programmes

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Graduate studies -- tools för introduction and follow-up

- the **six months project**
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Monitoring progression

- Professional and personal development tool
 - **S.M.A.R.T.** objectives
 - Specific, Measurable, Achievable, Realistic/Relevant & Time-bound
 - Tool developed at the Department of Physics
 - The tool is available for downloading
 - <https://intranet.chalmers.se/en/tools-support/doctoral-studies-support/during-your-doctoral-studies/tools-for-supervisors/>





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Professional and personal development tool

- Evaluate various skills
 - PhD student's copy
 - Supervisor's copy
- Identify areas that need to be further developed

Knowledge of the scientific field covered	
Understanding of the techniques used in the research project	
Apply scientific methodology in research	
Conduct research in an ethical, responsible and honest manner	
Ability to have a scientific discussion about your research results	
Ability to summarize and critically reflect on own and other results	
Ability to organize information in a clear way and put them in context	
Explain complex relations in an understandable manner to non-experts	
Write scientific text in general	
Write scientific articles in particular	
Ability to manage your own research project from start to end	
Effectiveness in carrying out work	
Prioritisation of tasks and activities under time constraints	
Demonstrate willingness to learn, flexibility, open-mindedness and self-awareness	
Show initiative, work independently and be self-reliant	
Formulate your own scientific questions	
Networking and teamworking	
Adaptability to new environments	
Communication and social skills in general	
Teaching skills	
Supervising skills	

Professional and personal development tool

Knowledge of the scientific field covered	
Write scientific text in general	
Write scientific articles in particular	
Prioritisation of tasks and activities under time constraints	

Professional and personal development tool

Name:

Date:

Factor to develop:

What is the goal?

➤ Plan of actions

- Areas that need to be further developed

Why is that important for me?

What do I need to do to reach this goal?

What resources do I need?

Who can help me during the process?

How do I assess progress?

When do I evaluate progress and completion?

Comments

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Graduate studies -- tools för introduction and follow-up

➤ the six months project

- the graduate student is actively working on her/his research project directly after admission to the graduate school
- first six months of graduate studies

➤ the doctoral student's individual study plan (ISP)

➤ the Professional and personal development tool

- the graduate student gets support in developing different skills

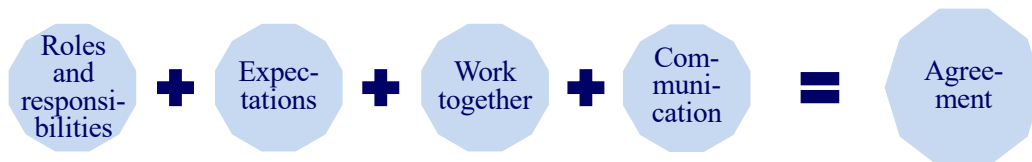
➤ a tool for supervisors and doctoral students: **Agree on how to work together**

- reach an agreement between the doctoral student and the main supervisor
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Supervision of doctoral students

- the tool for supervisors and doctoral students
 - Agree on how to work together
- the purpose of the tool
 - create a mutual opinion about how the supervision should be carried out
 - the doctoral student's expectations
 - the main supervisor's expectations
 - the needs and methods vary in time
- the contents of the tool
 - four steps to create clarity and trust
 - agreement between the doctoral student and the main supervisor
 - regular re-evaluation and update



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Expectations

- How will we
 - share responsibility ?
 - communicate ?
 - meet ?
 - work together ?

	1	2	3	4	5	
1 It is the supervisor's responsibility to select a research topic						The student is responsible for selecting his/her own topic
2 It is the supervisor who decides which theoretical framework or methodology is most appropriate						Students should decide on which theoretical framework of methodology they wish to use
3 The supervisor should develop an appropriate programme and timetable of research and study for the student						The supervisor should leave the development of the programme of study to the student
4 The supervisor is responsible for ensuring that the student is introduced to the appropriate services and facilities of the department and University						It is the student's responsibility to ensure that he/she has located and accessed all relevant services and facilities for research
5 Supervisors should only accept students when they have the specific expertise in the student's chosen subject						Supervisors should feel free to accept students even if they do not have the specific expertise in the student's particular research field.
6 It is essential that the student-supervisor relationship remain on a professional only level.						Successful supervision depends on a strong personal relationship developing between supervisor and student
7 The supervisor should insist on regular meetings with the student						The student should decide when he/she wants to meet the supervisor
8 The supervisor should check regularly that the student is working consistently and on the task						The student should work independently and not have to account for how and where time is spent
9 For successful supervision the supervisor must provide emotional support and encouragement to the student						Personal counselling and support are not the responsibility of the supervisor- students should look elsewhere.
10 The supervisor should insist on seeing all drafts of work to ensure that the student is on the right track						Students should submit drafts of work only when they want constructive criticism from the supervisor
11 The supervisor should assist in the writing of the thesis if necessary						The writing of the thesis should only ever be the student's own work
12 The supervisor is ultimately responsible for decision regarding the standard of the thesis						The student is responsible for the final decisions concerning the standard of the thesis

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Tools for supervisors and doctoral students

- available for downloading
 - Agree on how to work together
 - Expectations student supervisor
 - Professional and personal development tool

<https://intranet.chalmers.se/verktyg-stod/forskarutbildning/under-forskarutbildningen/verktyg-for-handledare/>

Time for Questions