STOCKHOLM UNIVERSITY
Department of Statistics

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Course description

Master's Thesis in Statistics, 30 ECTS credits, advanced level, spring term 2024

Examensarbete i statistik för masterexamen, 30 högskolepoäng

Course code: ST7901

Contents and learning outcomes

The course comprises of one module:

1. **Master's Thesis in Statistics**, 30 ECTS credits, including oral presentation and oral discussion.

The main part of the course is the writing of a master's thesis on a topic in applied or theoretical statistics. The work on the thesis starts at the beginning of the term and is to be completed at the end of the same term. The student is assigned a supervisor, usually a teacher at the Department of Statistics. The student may suggest a topic; the topic may also be provided by the supervisor.

During the course students will acquire planning skills as well as skills on how to organize and successfully complete a large project. There are many other facets of the course that are vital in any applied or theoretical project; for example, students will have to find ways to apply or devise methods in a field that is unfamiliar to them. Other tasks that students will practice include finding a relevant literature, assessing it critically; organising and writing a scientific report.

At the master theses seminars at the end of the course each student presents her or his thesis orally and takes part in discussions of other students' theses. In sum, the course will give students ample opportunity to develop transferable skills of great importance for all types of applied and scientific work and indeed any type of inquiry.

Expected learning outcomes

To pass the course the student should be able to:
- formulate, analyse and adequately solve a statistical problem
- identify and formulate issues critically, autonomously and creatively
- show considerable knowledge and understanding in statistics
- use appropriate methods, undertake advanced tasks within predetermined time frames and in so doing contribute to the formation of knowledge as well as the ability to evaluate this work
- document and report on a scientific project in writing
- seek and assess statistical reports and scientific studies critically

- present and discuss statistical reports orally
- See further under Grading criteria

General information, co-ordinator and resources

The Department of Statistics is located on the 6th floor in the 4th building, Campus Albano. General information about the department (office hours, phone numbers, schedules etc.) is posted on the department website, www.statistics.su.se.

Additional information about the course, (e.g. syllabus, schedule) is posted on the course website, see https://www.su.se/english/search-courses-and-programmes/st7901-1.566566?open-collapse-boxes=course-time-table,course-material

Coordinator and examiner:	Reception hours	Room	E-mail
Andriy Andreev	On agreement	A4628	Andriy.Andreev@stat.su.se

Teaching and supervision

The schedule with the exact times and venues can be found at the course website (see above).

The teaching consists of lectures according to the schedule and supervision throughout the course. Attendance at the master theses seminars is mandatory. There may be other events, which may be mandatory; if so, students are informed well ahead of time. Time for supervision is limited to 20 hours.

Note that full-time students are only guaranteed a supervisor during the term the student is first enrolled in the course. See the Course syllabus for more information
https://www.su.se/sok-kurser-och-program/st7901-1.566566?open-collapse-boxes=course-time-table

Course literature and other resources

Students will need specialised literature to complete their theses. Some literature will be decided on with the aid of the supervisor although students are expected to independently and on their own initiative search for relevant literature.

- Additional material distributed during the course, for example, lecture notes and other material

All documents posted on Athena,
https://athena.itslearning.com/ContentArea/ContentArea.aspx?LocationID=4704&LocationType=1
or the course website (see below), are considered as being distributed during the course.

General information and documents pertaining to the course are continuously posted on the Athena system, available to all students enrolled in the course; see
https://athena.itslearning.com/ContentArea/ContentArea.aspx?LocationID=4704&LocationType=1

Timetable and deadlines

Topic and supervisor

At the very start of the spring term students have the first meeting with the course coordinator and discuss available options for writing the master's theses. During period of two weeks after the start of the course, supervisors are assigned for the students who intend to take the course.

Students must contact the course coordinator (see name above) about their intension to complete the course during the current term by *January 30th, 15:00* at the latest. Students who have not been in touch with the course coordinator by this date may not be able to write a master thesis with supervision this term.

Outline of the thesis

Students should submit an outline (typically 2-3 pages) of their thesis to their supervisor and to the course coordinator on *February 09 at the latest*. The student and the supervisor may agree on an alternative way to go; what matters is that there is a written plan for the master thesis on Feb 09 at the latest.

Drafts

Students are required to submit drafts of their thesis to their supervisor and to the course coordinator according to the following schedule:

1. first draft *at latest on March 15*
2. second draft *at latest on April 12*
3. third draft *at latest on May 3*

In many cases the student and the supervisor will agree on an earlier dates.

Teaching and half-time seminars

Time	Room	Topic
L1		General information and scientific writing
L2		More on scientific writing. Ethical considerations and plagiarism
L3		More on scientific writing
		Half-time seminars

Final submission of thesis

Students should submit a pdf file to the course coordinator and to their supervisor *by May 17 at 3 o'clock pm, at the latest*. Use the template for the cover page that will be made available to you. This is the version that will be evaluated for fit for presentation on the final seminar. The theses will be run through software which will detect plagiarism.

Seminars

The master's theses seminars will take place during the weeks *May 27 – June 1*. The schedule for these days, with time slots when the thesis is to be presented and discussed, will be set at the latest one week ahead of presentation time. The schedule will further include allocation of discussant for

every student. Being discussant is one of the obligatory parts for passing the course. Attendance of master thesis seminars is mandatory for all students taking the course.

Mandatory attendance

Only the seminars (see previous paragraph) are mandatory. However, it is strongly recommended to attend all sessions in order to better achieve the learning goals.

Examination and assessment

Examination components

The examination consists of the following components: (1) master thesis and public defense, (2) opposition and discussion of another student's thesis (3) Seminar participation. To pass the course the student must pass all three components. Descriptions, the grading criteria and weighting of each component are described below.

(1)   11SA, Master thesis (28, graded A-F)

To pass students are required to successfully submit an outline and plan for their work, drafts and a final version of their thesis according to the time-table above. The thesis should be a clear and comprehensive description of a statistical problem, independently solved and documented by the student. For a more thorough description of the expectations of the thesis, see the grading criteria below.

(1b) Oral presentation and defense of thesis

Having successfully completed the module, students will be able to

- present statistical reports and scientific studies
- discuss statistical work

To pass students are to present their thesis clearly and accurately. Students should within the allotted time give an overview of the thesis, present and discuss relevant details, appropriately chosen with a focus on what is important. The conclusions of the thesis should be clearly presented and appraised. Students should be able to answer questions about their thesis on satisfactory detailed level.

(2) 12OP, Opposition: Discussion of another student's thesis (1.5, graded Pass/Fail)

Having successfully completed the module, students will be able to

- critically assess statistical reports and scientific studies
- discuss statistical work

To pass students are expected to discuss some other student's master thesis. Students must have read the thesis carefully, be able to summarise arguments and conclusions, and by way of discussion communicate the strengths of the thesis. Students should in their discussion be able to question or discuss choice of methods and the strength of conclusions as they have been presented. Each discussant is required to provide a 1-2+ pages written report of their discussion to both course coordinator and the student that wrote the thesis. For a pass on this criteria, students must actively participate in the master thesis seminars.

(3) 13SM, Seminar Participation (0,5, graded Pass/Fail)

As described in the course syllabus (Swedish version)

Grades

Grading is done according to a seven-point scale related to the specified learning outcomes:

A.   Excellent
B.   Very good
C.   Good
D.   Satisfactory
E.   Pass
Fx.   Insufficient
F.   Completely insufficient

See criteria below. To pass a minimum grade of E is required. This may require a revision of the thesis in accordance to written or oral specifications given by the supervisor and/or the examiner after the master theses seminar. It is important to note that presenting the thesis at the seminar does not in itself mean that the thesis is graded as a pass.

If the student has failed on any of the three components of the examination, the student has not passed the course. Regarding component (1), it is the version of the thesis submitted on final deadline specified above that is the basis of grading. The overall grade for the course will be based mostly on the grading of the master's thesis, provided that the student passes components (2) and (3). The latter two components might slightly influence the overall grade given that the grade is between two grades based on criteria (1).

If the thesis is not completed during the term the student is first enrolled in the course and a manuscript not submitted on time according to the final deadline specified above, a maximum grade of "C" can be obtained. A student who has passed components (2) and (3) but not component (1) does not have to redo components (2) and (3) if the students passes component (1) within two years since the day of her or his presentation of the thesis. Contact the course coordinator for more information.

Students not passing the course during the current term are requested to contact the course coordinator at the beginning of the course the next time the course is given for information about the rules for examination. See the Course syllabus for more information
https://www.su.se/english/search-courses-and-programmes/st7901-1.566566?open-collapse-boxes=course-time-table,course-material

The above deadlines concern full-time students: they are expected to work with the master's thesis full time. However, it is possible to study the course on a part-time basis. Part-time students must at the beginning of the term clearly state their intention and discuss possibilities with the course coordinator or/and study director. Students must be in touch with the course coordinator (see name above) about their intension to complete the course on a part-time basis by *January 30* at the latest. Opportunity to discuss the part-time option is closed after the date. It is expected that students that choose a part-time option submit their work in December 2024 and defend the thesis late December 2024 or beginning of January 2025. If not done on timely basis, the student cannot get grade higher than "C" when the work is submitted at a later stage. The part-time students are expected to attend lectures on the same occasions as the full-time students. Note, that no supervision is provided beyond spring 2024. Time for intermediate seminars (if any) during autumn 2024 will be announced separately at the start of the autumn term 2024.

AI-tools and plagiarism

It is allowed and actually encouraged to use AI-tools for finding information to be used in the thesis. Plagiarism, including copy/paste from sources without a proper referencing as well as from AI-generated texts is prohibited. Use of AI-tools to improve the final manuscript is also not allowed. Department of Statistics will use certain tools to check for above described misuses. Please, check with the regulations of Stockholm University on the issue: Regulations

Grading criteria

Grade	Criteria
A	***Knowledge***. The thesis demonstrates excellent knowledge and understanding in statistics, including broad knowledge of the field and a considerable degree of excellent, specialised knowledge in certain areas of the field as well as good insight into current research and development work. The student has also in components (2) and (3) showed excellent in-depth knowledge of some areas of the statistical science. ***Competence and skills.*** The student has demonstrated excellent ability to identify and formulate issues critically, autonomously and creatively as well as to plan and, using appropriate methods, undertake advanced tasks, surpassing a level that is ordinarily expected of master of science, within predetermined time frames and so contribute to the formation of knowledge as well as the ability to evaluate this work. The student has demonstrated excellent ability to critically and systematically integrate knowledge and analyse, assess and deal with complex phenomena, issues and situations even with limited information. The student has made a clear account of the arguments that form the basis of the conclusions presented in the thesis. The student has demonstrated ample skills required for participation in research and development work or autonomous employment in some other qualified capacity. The student has demonstrated excellent ability in speech and writing to report clearly and discuss his or her conclusions and the knowledge and arguments on which they are based. ***The thesis.*** The thesis is written clearly, succinctly and accurately; it is well organised, has skilfully crafted tables and graphs (if relevant), effective and carefully used references, etc. ***Judgment and approach.*** The student has in components (1-3) shown excellent ability to form sound judgments, both in terms of scientific judgments and judgments in choice of problem solving methods (including choice of focus and assumptions that are appropriate for the problem). The student has through her or his way of working and achievements shown excellent ability to assess her or his own work. The student has in components (1-3) demonstrated excellent ability to make assessments in the main field of study informed by relevant disciplinary, social and ethical issues. The student has demonstrated the ability to identify the personal need for further knowledge and take responsibility for his or her ongoing learning.
B:	Meets the criteria for C and partially the criteria for A.

C:	***Knowledge***. The thesis demonstrates considerable knowledge and understanding in statistics, including both broad knowledge of the field and a considerable degree of solid, specialised knowledge in certain areas of the field as well as good insight into current research and development work. The student has also in components (2) and (3) showed considerable in-depth knowledge of some areas of the statistical science. ***Competence and skills.*** The student has demonstrated considerable ability to identify and formulate issues critically, autonomously and creatively as well as to plan and, using appropriate methods, undertake advanced tasks, well at a level expected of master of science, within predetermined time frames and so contribute to the formation of knowledge as well as the ability to evaluate this work. The student has demonstrated considerable ability to critically and systematically integrate knowledge and analyse, assess and deal with complex phenomena, issues and situations even with limited information. The student has made a clear account of the arguments that form the basis of the conclusions presented in the thesis. The student has demonstrated the skills required for participation in research and development work or autonomous employment in some other qualified capacity. The student has demonstrated the ability in speech and writing to report clearly and discuss his or her conclusions and the knowledge and arguments on which they are based. ***The thesis.*** The thesis is written clearly and accurately; it is well organised, has well-crafted tables and graphs (if relevant), effective and carefully used references, etc. ***Judgment and approach.*** The student has in components (1-3) shown considerable ability to form sound judgments, both in terms of scientific judgments and judgments in choice of problem solving methods (including choice of focus and assumptions that are appropriate for the problem). The student has in components (1-3) demonstrated considerable ability to make assessments in the main field of study informed by relevant disciplinary, social and ethical issues. The student has demonstrated the ability to identify the personal need for further knowledge and take responsibility for his or her ongoing learning.
D:	Meets the criteria for E and partially the criteria for C.
E:	***Knowledge***. The thesis demonstrates knowledge and understanding in statistics, including both broad knowledge of the field and a considerable degree of specialised knowledge in certain areas of the field as well as insight into current research and development work. The student has also in components (2) and (3) showed some in-depth knowledge of some areas of the statistical science. ***Competence and skills.*** The student has demonstrated the ability to identify and formulate issues critically, autonomously and creatively as well as to plan and, using appropriate methods, undertake advanced tasks within predetermined time frames and so contribute to the formation of knowledge as well as the ability to evaluate this work. The student has demonstrated the ability to critically and systematically integrate knowledge and analyse, assess and deal with complex phenomena, issues and situations even with limited information. The student has made a clear account of the arguments that form the basis of the conclusions presented in the thesis. The student has demonstrated the skills required for participation in research and development work or autonomous employment in some other qualified capacity. The student has demonstrated the ability in speech and writing to report clearly and discuss his or her conclusions and the knowledge and arguments on which they are based.

	The thesis. The thesis has no severe shortcomings in a clear and accurate exposition, in its organisation, tables and graphs (if relevant), nor in its use of references, etc. ***Judgment and approach.*** The student has in components (1-3) shown ability to form sound judgments, both in terms of scientific judgments and judgments in choice of problem solving methods (including choice of focus and assumptions that are appropriate for the problem). The student has in components (1-3) demonstrated the ability to make assessments in the main field of study informed by relevant disciplinary, social and ethical issues. The student has demonstrated the ability to identify the personal need for further knowledge and take responsibility for his or her ongoing learning.
Fx:	The thesis is clearly not 30 credits worth of work *or* the student's achievements with respect to at least one of the criteria in E has serious shortcomings.
F:	The learning outcomes have not been achieved. The task of achieving them appears insurmountable within the period of time of supervision.