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Applied Measurement Science (AMS)

Master's Programme:

- The nominal study period is 2 years
- Tuition in English
- Master of Science in Engineering

http://www.ut.ee/ams

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Importance of Measurements?

- Importance of measurements is enormous:
  - ❖ Critical decisions (economical, social, medical) are based on results of measurements
  - ❖ **40% of the EU directives** involve measurements

http://www.ut.ee/ams

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Key to success: Education

- The broader aim of the curriculum is to qualify specialists for working on the areas where competence in measurements, metrology and quality systems is required.
- This is why the AMS programme was launched

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From which countries the students come?

- 38% Estonia
- 62% foreign (Ukraine, China, Great Britain, Romania, Turkey, Latvia, Uzbekistan, Uganda, Jordan, Kasakhstan, Chroatia, Albania, Lithuania, Nepal, Albania, Ghana, India, Nigeria, Sri Lanka, Malawi)

http://www.ut.ee/ams

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2013: India, Ukraine, Latvia, Nigeria, Ghana, Sri Lanka, Malawi

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Outline

- **Cross-sectorial**
  - Physical measurements
  - Chemical measurements (analyses)
  - Metrology
  - Quality systems
  - Economic and legal aspects of measurements

http://www.ut.ee/ams

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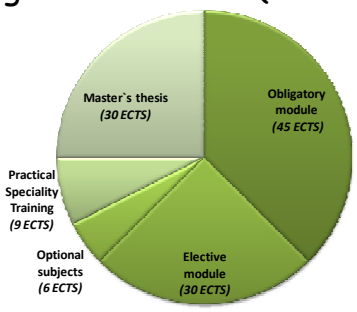
Program structure (120 ECTS)



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Master's thesis

- This is a **serious** scientific research project.
- It is very important to begin Master`s thesis work as soon as possible at the beginning of study.
- You should not expect that you will be able to complete it with one semester.
- The best advisor for you is your Master`s thesis supervisor.
- The information about research groups at the Seminars in Measurement Science (starting from September 4) .

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Autumn 2013 Timetable

Monday

Time	Course code	Course title	Location	Week(s)	Lecturer(s)
13.15 - 19.00	LOKT.06.047	Atomic Spectroscopy (lecture)	Ravila 14A - 1100	12-13	Ivo Leito, Teemu Matias Näykki

Tuesday

10.15 – 16.00	LOKT.06.047	Atomic Spectroscopy (seminar)	Ravila 14A - 1051	12-13	Ivo Leito, Teemu Matias Näykki

obligatory (red)
elective (yellow)

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Autumn 2013 Timetable

Wednesday

Time	Course code	Course title	Location	Week(s)	Lecturer(s)
8.15 - 10.00	LOFY.01.036	Measuring and Instrumentation (lecture)	Tähe 4 - 411	1-16	Koit Mauring
12.15 - 14.00	LOKT.06.032	Practical Chemical Analysis (lecture)	Ravila 14A - 1100	1-16	Koit Herodes, Ivo Leito
14.15 - 16.00	LOFY.01.082	Quality Management (lecture)	Tähe 4 - 410	2-16	Mart Noorma
14.15 - 16.00	LOKT.09.022	Structural Analysis I (lecture)	Ravila 14A - 3070	1-16	Uno Mäeorg
16.15 - 18.00	LOKT.06.036	Master Seminar in Measurement Science (seminar)	Ravila 14A - 1100	1-16	Koit Herodes, Anneli Kruve, Ivo Leito

Thursday

10.15 - 12.00	LOFY.01.037	Modern Metrology	Tähe 4 - 427	2-16	Martin Vilbaste, Mart Noorma
12.15 - 14.00	LOKT.09.028	Quality systems	Ravila 14A-1104	3-16	Jukka Veli Hiltunen

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Autumn 2013 Timetable

Friday

Time	Course code	Course title	Location	Week(s)	Lecturer(s)
10.15 - 12.00	LOFY.01.039	Measurement Data Processing (lecture)	Tähe 4 - 427	1-16	Erko Jakobson
12.30 - 14.00	LOKT.06.032	Practical Chemical Analysis (lecture)	Ravila 14A - 1100	1-16	Koit Herodes, Ivo Leito
14.15 - 16.00	LOKT.02.035	Electrochemical Methods for Quantitative Analysis (lecture)	Ravila 14A - 1100	1-16	Jaanus Kruusma

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Obligatory subjects (courses)

full information https://www.is.ut.ee/pls/ois_sso/!tere.tulemast

Course	Code	ECTS	Lect/Sem /Lab	Comments
Measuring and Instrumentation	LOFY.01.036	3	Lect	Core lecture course on physical measurements (physical basis of measurement methods)
Measurement Data Processing	LOFY.01.039	3	Lect	Core lecture course on measurement-related data processing (mathematical statistics, distribution functions, measurement uncertainty, etc)
Practical Chemical Analysis	LOKT.06.032	6	Lect, Seminar	Core lecture course on chemical analysis (Physical and chemical principles of the main classical and instrumental methods of chemical analysis, calculations in analytical chemistry)
Modern Metrology	LOFY.01.037	3	Lect	Core lecture course on general and physical metrology
Quality Management	LOFY.01.082	3	Lect	Lecture course on quality systems (ISO 17025, ISO 9001)
Master Seminar in Measuremnt Science	LOKT.06.036	12 (3)	Seminar	Seminar (work with literature, presentations, monitoring the progress of master thesis)
Practical physical measurements and calibrations	LOFY.01.040	3	Lab	Core lab course on physical measurements
Practical Works in Chemical Analysis and Metrology	LOKT.06.033	6	Lab	Core lab course on chemical analysis
Metrology in Chemistry	LOKT.06.030	6	Lect, Comput. lab	Core lecture course on metrology in chemistry (method validation, traceability, reference materials, measurement uncertainty in chemistry, ...)

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Elective subjects (courses)

Course	Code	ECTS	Lect/Sem /Lab	Comments
Materials characterization and testing methods in chemistry	LOKT.01.063	6	Lect, lab	Classical and modern (SEM, STM, AFM) methods of materials testing
Electrochemical Methods for Quantitative Analysis	LOKT.02.035	3	Lect, lab	Measurement science in electrochemistry
Basics of Materials Science presented in English I	LOFY.02.057	3	Lect	Introduce the fundamentals of Materials Science
Basics of Materials Science presented in English II	LOFY.02.058	3	Lect	Develop the ability to apply English terminology in scientific communication.
Atomic Spectroscopy	LOKT.06.047	3	Lect	Atomic mass spectrometry etc. Case studies.
Measurements and the Law	LOKT.06.034	3	Lect	Legal aspects of measurements
Economic aspects of measurements	LOKT.06.035	3	Lect	Economic impact of measurements
Signal Processing	LOFY.01.020	3	Lect	Mathematics and algorithms for processing of measurement signals
Environment and Measurement	LOKT.04.072	3	Lect, Lab	Environmental applications of measurements
Measurements in Biochemistry	LOKT.10.017	3	Lect, Lab	Biochemical applications of measurements
Structural Analysis I	LOKT.09.022	3	Lect, Lab	Instrumental methods for determining molecular structure
Chemometrics	LOKT.08.005	3	Lect	Advanced data processing in science, especially in analytical chemistry
Nanometrology	LOFY.01.096	3	Lect	Measurements at nanometer level
Quality systems	LOKT.09.023	3	Lect	Lecture course on quality systems (ISO 17025, GLP)
Mechanical Behavior of Materials	LOFY.03.037	6	Lect	Mechanical properties of materials and their testing and measurement
Nuclear Engineering	LOFY.03.038	6	Lect	Introduction to nuclear processes and radiation, nuclear reactors and energetics, nuclear safety
Summer School - Measurement Science in Chemistry	LOKT.06.038	12	Lect, Sem, Lab	
Master Course in Biological Physics	LOFY.05.051	3	Lect	

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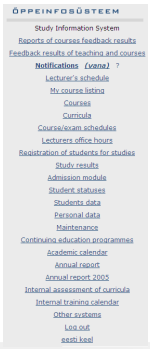
Study Information System (SIS)

- Address: **http://ois.ut.ee/**
- The administration of your studies proceeds fully via SIS

- The username and password of SIS are also used for accessing most other data systems here at UT
- Please monitor your e-mail account



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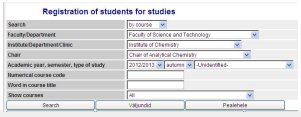
Taking a course, what does it mean?

1. Registering to the course via SIS
2. Attending the course
   - Performing intermediate tests, answering questions on practical works, if required, etc
3. Registering to the exam via SIS
4. Taking the exam
   - In some courses (labs) there are no exams



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Study progress requirements (120 ECTS)

http://www.ut.ee/en/when-should-i-pay-tuition-fee

contract for compensation of study expences and targeted scholaship!

- **Per semester you should get**
  - **preferably 30 ECTS**
  - **as a minimum 24 ECTS**

In the case of extensive previous experience **credit transfer is possible**

The credits transferred using the credit transfer system are not taken into account in determining the minimum number of credit points acquired during semester.

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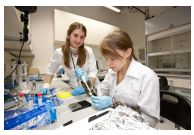
Locations of studying

Chemistry building "Chemicum" Ravila 14a
(Institute of Chemistry)



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Locations of studying

Physics building
Tähe 4

Physics building ("Institute of physics") Riia 142

New physics building

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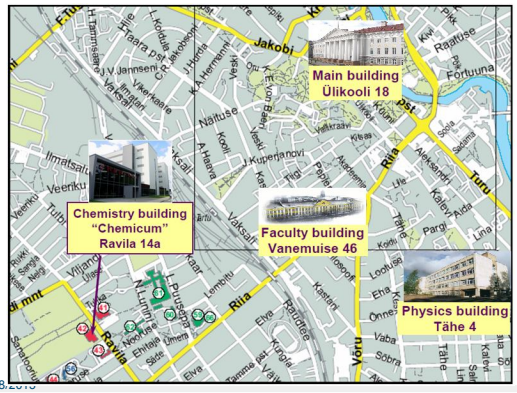

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Access to the Chemistry Building form the Centre

- The bus shedules at:

http://www.peatus.ee/#route_search/eng

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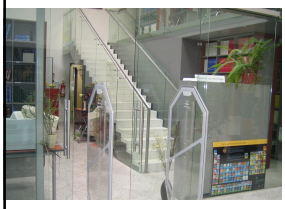
UT academic library



Ravila 14a

Struve 1

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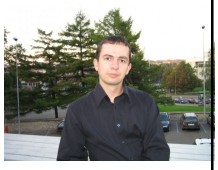
Program Coordination



Sergei Jurtšenko, programme manager
- sergeij8@gmail.com
- Telephone +372 53 80 67 60

– Study-program-related questions
  - Choosing courses
  - Taking into account previous experience
  - Etc…

Professor **Ivo Leito**, programme development
- Institute of Chemistry
- Ravila 14a - 4034
- Telephone +372 518 4176
- ivo.leito@ut.ee

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Dean's office

Kairi Hõlpus, student advisor
- kairi.holpus@ut.ee, +372 7 375 829,
- Vanemuise 46 – 208

– Study-administrative questions

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International student office

Kaija Murasov, International student coordinator
- degree seeking international students
- Kaija.Murasov@ut.ee, +372 7 375 152, Ülikooli 18 – 104

– Problems not directly related to the study program
- Visa, Residence permit, Health insurance, **Dormitory**, …

– Ülikooli 18
The "main building": **International Student Service**

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Stipends/Scholarships

http://www.ut.ee/en/scholarships-master

- **Scholarships covering the tuition fee for almost all students**
  - Regular tuition fee 4430 EUR/year
- **Research Stipends for hard-working students**
  - Up to 2550 EUR/year
  - From research groups, normally from 2nd semester
- **"DoRa 9" Stipends (up to 300 EUR/month)**
  - According to study results (no application needed)

DoRa ESF PROGRAMME

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Measurement Science in Chemistry

- In 2008 ECTNA Euromaster® quality label was awarded to **Measurement science in chemistry Consortium**
- International consortium (7 countries; 9 universities)
  - Estonia, Slovenia, Bulgaria, France, Portugal, Poland, Finland

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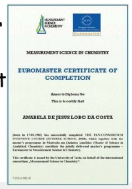
What is in it for you?

- You can apply for a study place
  - It is for the best students
  - Number of places is limited

- You will get
  - Advanced training in an international summer school by leading European experts
  - An additional Euromaster diploma supplement after graduation
  - 12 ECTS to elective module



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Summer schools

- Summer 2009 Blagoevgrad (Bulgaria)
  - 43 participants, 9 countries
- Summer 2010 Lepanina (Estonia)
  - 39 participants, 9 countries
- Summer 2011 Poznań (Poland)
  - 43 participants, 13 countries
- Summer 2012 Fatima (Portugal)
  - 48 participants, 13 countries
- Summer 2013 Lyon (France)
  - 34 participants, 10 countries
- Summer 2014 Pulawy (Poland)

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THANK YOU

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