MATR309 Radiation Protection

- 1. Course title
- 2. Course code
- 3. Course status: optional
- 4. Course level (first-, second-, third-cycle/EQF levels 6, 7 and 8)
- 5. Recommended time/stage of studies for completion
- 6. Term/teaching period when the course will be offered
- 7. Scope of the course in credits
- 8. Teacher coordinating the course
- 9. Course learning outcomes
- 10. Course completion methods
- 11. Prerequisites
- 12. Recommended optional studies
- 13. Course content
- 14. Recommended and required literature
- 15. Activities and teaching methods in support of learning
- 16. Assessment practices and criteria, grading scale
- 17. Teaching language

1. Course title

Säteilysuojelu
Strålningsskydd
Radiation Protection

2. Course code

MATR309

3. Course status: optional

-Which degree programme is responsible for the course?
Master's Programme in Materials Research

-Which module does the course belong to?
MATR300 Advanced Studies in Materials Research optional for
  - Study Track in Experimental Materials Physics
  - Study Track in Medical Physics and Biophysics

-Is the course available to students from other degree programmes?
Yes

4. Course level (first-, second-, third-cycle/EQF levels 6, 7 and 8)

Master's level, degree programmes in medicine, dentistry and veterinary medicine = secondcycle degree/EQF level 7
Doctoral level = third-cycle (doctoral) degree/EQF level 8

-Does the course belong to basic, intermediate or advanced studies (cf. Government Decree on University Degrees)?
Advanced studies

5. Recommended time/stage of studies for completion

6. Term/teaching period when the course will be offered

Spring term, period III, every year

7. Scope of the course in credits
5 cr

8. Teacher coordinating the course

Merja Blomberg

9. Course learning outcomes

- Description of the learning outcomes provided to students by the course
- See the competence map (https://flamma.helsinki.fi/content/res/pr/HY350274).

On successful completion of the course, students will have knowledge and understanding of

- the use and effects of ionizing radiation
- the fundamental principles of radiation protection
- the radiation legislation and regulations in Finland

will be able to

- identify, evaluate and minimize risks involved in the use of radiation
- adopt safe working procedures
- apply safety regulations in practice

10. Course completion methods

- Will the course be offered in the form of contact teaching, or can it be taken as a distance learning course?
- Description of attendance requirements (e.g., X% attendance during the entire course or during parts of it)
- Methods of completion

- Weekly exercises, excursion and laboratory reports, oral presentations or essays, a final exam

11. Prerequisites

- Description of the courses or modules that must be completed before taking this course or what other prior learning is required

- Kvanttifysikaan sovelluksia I - Atomit ja molekyylit (FYS2005)
- Kvanttifysikaan sovelluksia II - Tiivis aine ja alkeishiukkaset (FYS2006)

12. Recommended optional studies

- What other courses are recommended to be taken in addition to this course?
- Which other courses support the further development of the competence provided by this course?

Recommended additional courses for Radiation Protection Expert's (RPE) competence:

RPE in research and industrial applications:

- Nuclear physics (MATR316)
- Radiation dosimetry (MATR315)
- Gaseous radiation detectors and scintillators (PAP338)
- Semiconductor radiation detectors (PAP339)
- Radiation damage in materials (MATR365)

RPE in medical applications:

- Medical Physics (MATR318)
- Radiation dosimetry (MATR315)
- Gaseous radiation detectors and scintillators (PAP338)
- Semiconductor radiation detectors (PAP339)

13. Course content

- Description of the course content

- Scientific foundations of radiation protection (physics, biology)
- Natural and man-made sources of ionizing radiation (overview)
- Measurement techniques, dose calculations, shielding design (overview)
- General principles of radiation protection, ethical considerations
- Legal and regulatory framework (national, European, international)
14. Recommended and required literature

- What kind of literature and other materials are read during the course (reading list)?
- Which works are set reading and which are recommended as supplementary reading?

Suomenkielinen kurssimateriaali:

- Säteily- ja ydinturvallisuus -kirjasarja, Säteilyturvakeskus
- STUK-A235, Säteilysuojelun perussuositukset 2007
  – Suomenkielinen lyhennelmä julkaisusta ICRP-103
- Säteilylaki, Sosiaali- ja terveysministeriön asetus ionisoivasta säteilyystä, Valtioneuvoston asetus ionisoivasta säteilyystä

Literature and other materials in English:


15. Activities and teaching methods in support of learning

- See the competence map (https://flamma.helsinki.fi/content/res/pri/HY350274).
- Student activities
  - Description of how the teacher’s activities are documented
  - Lectures, exercise sessions, excursions, laboratory work, student presentations

16. Assessment practices and criteria, grading scale

- See the competence map (https://flamma.helsinki.fi/content/res/pri/HY350274).
- The assessment practices used are directly linked to the learning outcomes and teaching methods of the course.
  - Final grade (0-5) is based on the exam.

17. Teaching language

- Finnish, (English)