# ENSURE - Educating students for developing high quality research skills

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# Scientific competence -
## «Educating student for developing high quality research skills»
## ENSURE

Finn Egil Skjeldestad; MD/PhD
Department of Community Medicine,
Faculty of Health Sciences,
UiT The Arctic University of Norway,
Tromsø

E-mail: Finn.E.Skjeldestad@Uit.no

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# Scientific competence – 2013
# Introduction of a new curriculum plan

**2013 programme description – Not for scientific competence**

**2013 – programme description for**

- **Epidemiology**
- **Clinical epidemiology**
- **Biostatistics**

# Learning outcomes

## Knowledge:

Level 1: Have knowledge about, ie. be able to reproduce learned material
Level 2: Being able to apply knowledge in specific situations under supervision / supervision
Level 3: Being able to apply knowledge in specific situations independently and see relationships
Level 4: Being able to use knowledge, see connections and be able to supervise / guide others in the subject

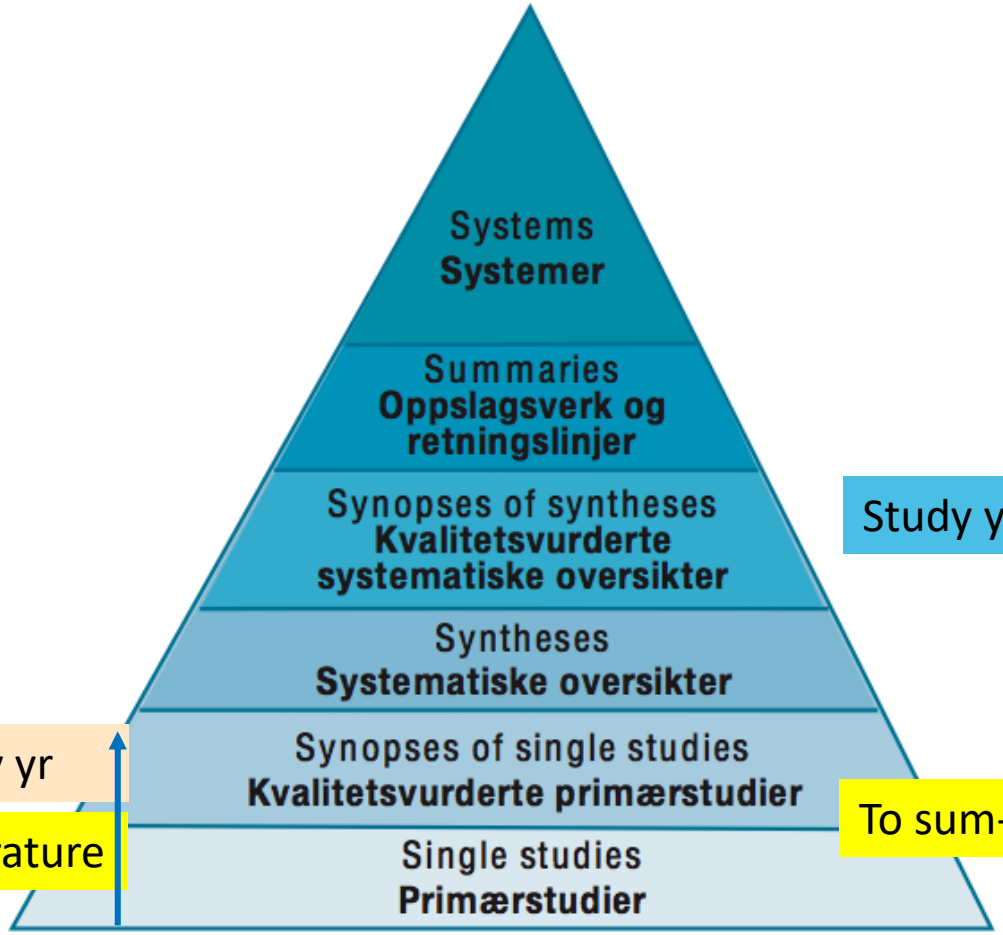
## Skills:

Level 1: Knowing how to perform
Level 2: Able to perform under supervision
Level 3: Able to perform independently
Level 4: Be able to perform as an expert and supervise / guide others

## Attitudes:

Level 1: Knowing that attitudes affect behavior
Level 2: Understanding or reflecting on own attitudes and how this affects behavior
Level 3: To act in line with attitudes as described in the learning objectives
Level 4: Being able to be a role model and further develop attitudes in the subject

# The knowledge pyramide




Study year

2nd/3rd study yr

To read literature

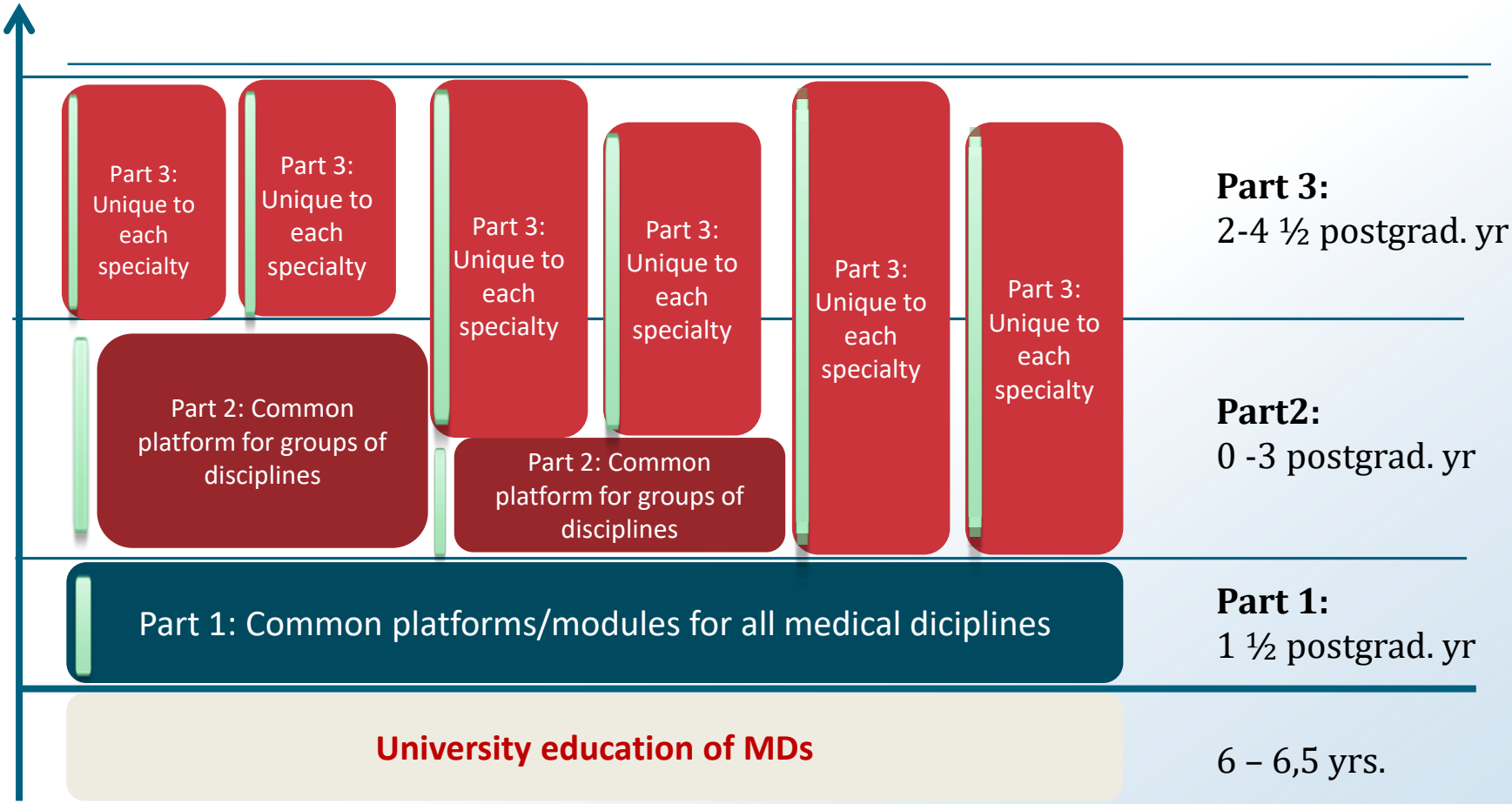
To sum-up literature

Principles of epidemiology/knowledge assessement

1st/2nd study yr

* From DiCenso A, Bailey E, B.Haynes. ACP Journal Club 2009

# New structure for postgraduate specialization in Norway
# Starting 2017 (Planning from 2014)




**Common compulsory competence modules** must be integrated in Parts 1, 2 and 3:
**Content:** Ethics, management, **system understanding**, organizational development, legislation, **quality and patient safety, understanding of research, knowledge management**, **communication, interaction, patient and user involvement, training of patients and relatives**

# Scientific competence – 2013
# Introduction of a new curriculum plan

| | | |
|---|---|---|
| 1st yr. - autumn | HEL 0700 (Introduction)<br>MED-1501 (Topic related introduction to science) | |
| | | |
| 2nd y.r - autumn | MED-2501<br>Epidemiology/statistics | **Exam**<br>Part of 2nd year |
| 2nd yr. – Nov./Feb.<br>(4 weeks)* | 2nd year scientific report | Passed/not passed |
| | | |
| Starts 3rd yr<br>4th year<br>5th year (11 weeks)* | MED-3950 «5th yr report»<br>(Masterthesis)<br>(20 credits) | Passed/not passed |

*No teaching

# Scientific compentence – new curriculum plan

| | Science/knowledge management |
|---|---|
| 1st yr autumn | HEL 0700 (Introduction)<br>MED-1501 (Topic related introduction to science) |
| 2nd yr autumn (7 weeks) | **Epidemiology/biostatistics**<br>**Introduction scientific knowledge management (part 1)** |
| 2nd yr from August to May | **Scientific specialization (Course unit 2.5)**<br>**Scientific Knowledge Management**<br>**(Part 2: given topics for specialization, group work)**<br>(assess and summarize literature on a narrow topic)<br>**2nd year scientific report (4 weeks no teaching)**<br>**Project plan/structured report/referee feedback/presentation report** |
| 3rd yr autumn | **Scientific Knowledge Management**<br>**Part 3: Integrated specialization, group work** |
| 4th yr spring | **Introduction/use of guidelines – Case MS** |
| 4th yr autumn | **Masterthesis**<br>**(project description) (4 weeks no teaching)** |
| 5th yr autumn | Masterthesis (5th yr report) (11 weeks no teaching) |
| 5th yr spring | |
| 6-år-høst | Presentation of masterthesis (3 (6)+2 min) |

**Much higher quality requirements**

SPIRAL LEARNING

# Scientific compentence – new curriculum plan

| | Science/knowledge management |
|---|---|
| 1st yr autumn | HEL 0700 (Introduction)<br>MED-1501 (Topic related introduction to science) |
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| 4th yr spring | **Introduction/use of guidelines – Case MS** |
| 4th yr autumn | **Masterthesis**<br>**(project description) (4 weeks no teaching)** |
| 5th yr autumn | Masterthesis (5th yr report) (11 weeks no teaching) |
| 5th yr spring | |
| 6-år-autumn | Presentation of masterthesis (5 (8)+2 min) |

Apply same concepts

Same structure to layout/ presentation

Masterthesis much higher scientific level: **worthy publishing**

SPIRAL LEARNING

# Scientific compentence – new curriculum plan

| | Science/knowledge management | Patient safety/quality |
|---|---|---|
| 1st yr autumn | HEL 0700 (Introduction to health care/laws/science)<br>MED-1501 (Topic related introduction to science) | |
| 2nd yr autumn (7 weeks) | **Epidemiology/biostatistics** | |
| | **Introduction scientific knowledge management (part 1)** | |
| 2nd yr from August to May | **Scientific specialization (Course unit 2.5)** | |
| | **Scientific Knowledge Management**<br>**(Part 2: given topics for specialization, group work)**<br>(assess and summarize literature on a narrow topic) | |
| | **2nd year scientific report (4 weeks no teaching)** | |
| | **Project plan/structured report/referee feedback/presentation report** | |
| 3rd yr autumn | **Scientific Knowledge Management**<br>**Part 3: Integrated specialization, group work** | |
| 4th yr spring | **Introduction/use of guidelines – Case MS** | **Introduction** |
| 4th yr autumn | **Masterthesis**<br>**(project description) (4 weeks no teaching)** | |
| 5th yr autumn | **Masterthesis (5th yr report) (11 weeks no teaching)** | **Follow and report a project in safety/quality*** |
| 5th yr spring | | |
| 6-år-høst | **Presentation of masterthesis** (5 (8)+3 min) | **More teaching on safety/quality improvement work** |
| | | **Presentation report project*** |

SPIRAL LEARNING

# Scientific compentence – new curriculum plan

| | Science/knowledge management | Patient safety/quality |
|---|---|---|
| 1st yr autumn | HEL 0700 (Introduction to health care/laws/science)<br>MED-1501 (Topic related introduction to science) | |
| 2nd yr autumn (7 weeks) | **Epidemiology/biostatistics** | |
| 2nd yr from August to May | **Introduction scientific knowledge management** (part 1) | |
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| 4th yr spring | | **ntroduction** |
| 4th yr autumn | **Masterthesis (project description)** (4 weeks no teaching) | |
| 5th yr autumn | **Masterthesis (5th yr report)** (11 weeks no teaching) | **Follow and report a project in safety/quality*** |
| 5th yr spring | | |
| 6-år-høst | **Presentation of masterthesis** (3 (6)+2 min) | **More teaching on safety/quality improvement work** |
| | | **Presentation report project*** |

LIBRARY ACCESS

Collaboratoin with library staff

Simple searches in scientific databases

SPIRAL LEARNING

## *Scientific competence – part 2.5A: 2nd year scientific report*

The students chooses the topics from

A. **Clinical practice**
B. **Research setting/group**
C. **Literature assessment**

**Learning outcome:** Students should be able

- to formulate a clinical research question in a self-chosen field using PICO (patient, intervention, comparison, outcome and design)
- to write a short project description based on the chosen problem
- to illuminate, explore and reflect on experiences in the chosen field
- to search for literature, obtain literature relevant to the problem
- to use references/render references
- to write a structured report
- to present the report

**Skills:**

- To write a short project description
- to write a structured report according to quidelines («Rapport UiT»)
- to present the report

## *Scientific competence – part 2.5A: 2nd year scientific report*

**Referees:** Members of the scientific committee

**According to the reference principle -** everyone gets feedback on something that can be improved

- The report is submitted for the 2nd or 3rd time before approved for presentation
    - Resource demanding examination form

- **Approved according to work requirement**

**Resource demanding examination form**

**Diploma** for the "top" 10 reports (high quality)

- all 10 diploma-candidates present to the litter (class)
- 5 presents for the next litter that starts in 2nd year (in the fall)

**Dissemination** (selected reports to the media; local radio, local and national newspapers, research networks etc.)

- **A goal to have at least 2-4 reports on the "air"**

# Criteria for selecting a diploma

- **Written after layout for «UiT reports»**
  - **Well disposed**
  - **Relevant content**
  - **Good language**
  - **Represent diversity of issues studied**
  - **Timely with regard to**
    - **Student issues/educational debate**
    - **Clinical - research-based issues**
    - **Social debate / relationship**
    - **Global perspective**

# Research issues – 2nd year scientific report

| | Class | | | | | |
|---|---|---|---|---|---|---|
| | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 |
| | N=99 | N=104 | N=101 | N=109 | N=106 | N=109 * |
| | % | % | % | % | % | % |
| **Clinical practice** | **82** | **79** | **65** | **44** | **20** | **6** |
| **Research group/setting** | **16** | **8** | **11** | **14** | **10** | **17** |
| **Review of courses** | | | **1** | | | |
| **Knowledge assessment** | **1** | | **6** | **18** | **36** | **59** |
| Clinical and research practice | | 3 | 4 | 6 | 3 | |
| Cl. practice/knowledge assessment | | 9 | 11 | 15 | 24 | 4 |
| Research/knowledge assessment | | 2 | | 4 | 8 | |
| Clinical practice/review courses | | | 2 | | | |

# Programme presentation of 2nd year reports; 20. April, 2018; class-2017 (1:6 pages)

| Tids-punkt | Navn | Land | Tittel oppgave |
|---|---|---|---|
| **Ansvarlig: Kristin Fenton** | | | **MH U6. A4 Aud 4** |
| | | | |
| 08.15 - 10.00 | Erikka Wikan Bystad | Brasil | Røykeprevalens blant gravide kvinner i Brasil |
| | Ida MW Johansen | Grønland | Spedbarnsdødelighet blant samer og inuitter med utdanning av native / nativtalende helsepersonell |
| | Ane Bones Nyhus | Norge | Hvordan jobber et eksistensielt team? |
| | Mira-Maria Krøger | Norge | Forbindelsen mellom menneskers psykiske helse og deres kjæledyr |
| | Haile Yordanos | Norge | Hva har det psykiske tilbudet ved ankomst Norge å si for hvordan innvandrere fungerer i samfunnet? |
| | Alvhilde Grønneberg | Norge | Vil den nye algoritmen for ECMO-HLR kunne bedre den prosentvise overlevelsen? |
| | Tora-Anette J. Aandahl | Kina | Forebygging av antibiotika resistens i tannhelsetjenesten i Nord-Kina |
| | Marie Gabler | New Zealand | Antibiotics in meat production with main emphasis on New Zealand |
| | Hanna Elise Ellingsen | Norge | Influensavaksinasjon av helsepersonell |
| | | | |
| **Ansvarlig: Johanna Laue** | | **MH U6. A1 Aud. 1** | |
| 08.15 - 10.00 | Alexandra Andreassen | Norge | Hvilken effekt har kjønnshormoner på utvikling av mentale lidelser og hvordan inngår de i beh..? |
| | Elin H. Sollid | Norge | Påvirker mørketiden tilflyttede studenter annerledes enn studentene som har bodd i Tromsø lengre |
| | Nora Bjarttun | Norge | Risikofaktorer for selvmord blant kvinnelige |
| | Håkon Edvardsen | Norge | Er det mer eller mindre fristbrudd på hastegradsvurderingen i dag sammenlignet med oppstart av øhjelpsprogrammet? |
| | Nadia Amjed | Norge | Langtidssyke barns tilværelse på sykehuset |
| | Julie Hammervold | Norge | Pre- and postnatal repair of myelomeningocele |
| | Giske Giernes | Norge | Rutiner for oppfølging av somatisk helse hos utviklingshemmede i kommunal bolig i Bergen |
| | Linnea Ryggetangen | Norge | Spiralbruk hos unge kviner |
| | Polina Siguina | Norge | Hvordan konfunderende faktorer påvirker spiral som risikofaktor for salpingitt – en litteraturstudie |
| | Eline Tylden | Norge | Is it time to update the Norwegian guidelines on diagnosis and treatment of uterine adenomyosis? |
| | Chris-William AW Bratberg | Norge | FMT's rolle som |
| | | | |
| **Ansvarlig: Finn Egil Skjeldestad** | | | **MH U6. A5 Aud. 5** |
| 08.15-10.00 | Ida Bredin/Hedi MJ Gaoup | Norge | Kvinnesykdommen vulvodyni - årsaker og diagnostisering |
| | Marie L. Helle | Norge | The silent suffering of female sexuality: Vaginismus |
| | Benedicte Opshaug/Kine MN Iversen | Malawi | Komplikasjoner etter utrygge aborter |
| | Mats O. Johansen/ Solveig McClure-Hattrem | Mexico | Komplikasjoner i svangerskap og fødsel hos unge kvinner i Mexico |
| | Magnus Edvardsen/Andreas S. Hansen | Brasil | Helseproblemer blant gravide tenåringer i Botucato, Brasil |
| | Ina Gimse/Nina Stensen | Norge | Svangerskaps- og fødselskomplikasjoner hos eldre førstegangsfødende kvinner |

## Scientific Knowledge Management (Part 2: given topics for specialization, group work)

Brief review of PICO, principles of summarizing scientific articles using checklists based on design, upgrading/downgrading of quality, electronic search strategies, reading statistics in articles, etc. (spiral learning: given topics, students make a synthesis of knowledge from individual articles)

Teachers select a problem in a topic dealt with in 3-5 articles.

**Learning outcome:**

students should be able to

- evaluate articles using a checklist for different study designs
- summarize the knowledge from the articles selected
- discuss strengths and weaknesses of the study design used/the knowledge summarized
- present the problem/synthesis of the knowledge to the whole class
- ask critical questions/comment on another presentation

**Skills:**

- could create PICO table for single articles (purpose/outcomes)
- could use the GRADE schema for evaluation of single articles
- be able to present the summary of knowledge assessment

# Knowledge management– Class-2017 H2018

| Student-group | Decipline | Research questions/themes |
|---|---|---|
| 12 | Epidemio | Oestrogens and CVD |
| 13 | Epidemio | COC and VTE |
| 14 | Epidemio | Thalodomide – from scandale to benefit |
| 4 | Ear-nose-th | When to start treating «acute otitis media» with antibiotics? |
| 2 | Ear-nose-th | Antibiotics for treatment of acute tonsillites? |
| 5 | Ear-nose-th | Tonsillectomy versus tonsilltomy? |
| 7 | Microbiology | Do steroids have any benefit on treatment of bacterial meningitis? |
| 10 | Muscle-skelet. | Cold ais as exposure for muscle-skeleton diseases? |
| 6 | Pharmacology | Preclinical studies with basimglurant |
| 8 | Pharmacology | Old and nye drugs in treatment of Parkinson's disease |
| 3 | Mental funk. | Psychiatric patients – interventions to loose weight |
| 9 | Mental function | Psychiatric patients – interventions to stop smoking |
| 11 | Mental function | Can melantonin treat depression? |
| 1 | Nevrology | Do psychiatric drugs increase mortality among psychiatric patients? |

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# Patient safety/quality improvement work

**Learning outcomes - 4th year:**

Topics are introduced, and students should

- be familiar with key concepts, approaches and methods in patient safety
- be able to define an adverse patient event (and be familiar with different views of the term), and be able to argue for/against whether an event is an adverse event
- be able to describe patient safety from a system perspective
- have knowledge of what characterizes good patient safety culture, and how patient safety culture can be positively and negatively affected
- be familiar with the improvement cycle (PDSA/Deming circle) and how it can be used to implement improvement projects in practice, including indicators of implementation and evaluation
- be familiar with the most commonly used tools in patient safety, patient-oriented quality and improvement work in national and international health care

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# Patient safety/quality improvement work

**5th year**

During their practice period in the fifth year, groups of students follow an ongoing patient safety/quality improvement project in a hospital, in primary health care

**and familiarize themselves with**

- the background
- implementation (staff involved, measuring instruments, milestone evaluation, etc.)
- results
- summarize the status of the chosen project.

**and present this summary for the class during 6th study year**

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# Patient safety/quality improvement work

**Learning outcomes 6th yr:**

Continuation of teaching from the fourth year (spiral learning), students should be able to

- use and communicate key methods in patient safety and quality improvement work
- use a system perspective to enhance patient safety (adverse events, medical errors, complaints)
- explain measures that influence patient safety culture and the working environment (team work, risk dashboards, whiteboard meetings, ISBAR)
- use the improvement model (PDSA/Deming circle) and driver diagram to implement improvement projects in practice (own experiences, practical assignments)
- define the goal of an improvement project
- use their own measurements for the implementation and evaluation of improvement projects
- know the requirements for success in quality improvement

**Learning outcomes 6th yr:** **Presentation of «observed project» during 5th study year**

# Timeline masterthesis

| | | |
|---|---|---|
| 2nd-3rd year | | Search for topic - formulate research question – find superviser |
| 4th study year- | August | Formulate research question – find superviser<br>Lectures<br>Introduction<br>Legal aspects<br>Literature search |
| | **October** | **4 weeks no teaching – write project plan** |
| | **October 31st** | **Deadline project plan** |
| 5th study year – | August | 2 weeks no teaching – work on project |
| | March-June | 11-12 weeks no teaching – complete masterthesis |
| 6th years- | September | Present masterthesis – a “defense” |

## Session 2: Neurology/neurosurgery/emergency medicine/trauma

## Chairman: Tor Ingebrigtsen, MD, PhD

| | Presenter last name | Presenter first name | Title |
|---|---|---|---|
| Tirsdag 24. sept. 14.15-16.00 | Bakke<br>Goll | Øystein<br>Jonas | Prevalens av insomni i den syvende Tromsøundersøkelsen 2015-16: Betydningen av bruk av ulike diagnosekriterier |
| | Ellingsen | Harald | **Anterior Cutaneous Nerve Entrapment Syndrome (ACNES) – a review** |
| | Mørch | Martin | En litteraturstudie om opioider sin langtidseffekt ved kroniske ikke-kreftrelaterte smertetilstander bedømt ut fra pasientrelaterte utfall, og deres risiko for overdoser |
| | Nebbneset | Ole | **Improvement in ASIA-score for traumatic spinal cord injured individuals** |
| | Halstensgård | Malin | Hvor mange med vertebrale kompresjonsbrudd identifisert i 2015 ble fulgt opp med beintetthetsmåling innen to år? |
| | Nylund | | ker bruk av |
| | Olsen<br>Skansen | | tenfor<br>ttig? |
| | Møller | Mikael | Prehospital kapnografi på ikke-intuberte pasienter Er kapnografi på ikke-intuberte pasienter ved bruk av Corpuls3, en nøyaktig og presis undersøkelse? |
| | Svendsen | Tuva | En systematisk litteraturstudie om temperatur og prehospital transport |
| | Svanstrøm | Christina | **Comorbidity among patients admitted to the Department of Surgery, Hammerfest Hospital** |
| | Haldorsen | Andreas | **The consequences of an ADHD-score in the clinical range in adolescence for mental health in young adults.** |

**Two parallell thematic sessions over 3 days –**
**10-14 presentations over 2 hours - time 14.15-16.00**

Have a solid platform to start the specialist education

| | Science/knowledge management | Patient safety/quality |
|---|---|---|
| 1st yr autumn | HEL 0700 (Introduction to health care/laws/science)<br>MF… …pic related introduction to science) | |
| 2nd yr (7 w… | …iology/biostatistics | |
| | …fic knowledge management (part 1) | |
| 2nd yr from August to May | …c specialization (Course unit 2.5)<br>…Scientific Knowledge Management<br>…rt 2: given topics for specialization, group work)<br>(assess and summarize literature on a narrow topic) | |
| | 2nd year scient… | |
| | Project plan/structured re… …eport | |
| 3rd yr autumn | Scientific K…<br>Part 3: Integrat… | |
| 4th yr spring | Introduction/… | Introduction |
| 4th yr autumn | Masterthes…<br>(project description) (4… …hing) | |
| 5th yr autumn | Masterthesis (5th yr report) (11 weeks no teaching) | |
| 5th yr spring | | |
| 6-år-høst | Presentation of masterthesis (3 (6)+2 min) | More te… …fety/quality imp… …ent work |
| | | Presentation report project* |

Spiral learning

Have a solid platform to start the specialist education/ post-graduate

Integrated lifelong knowledge challenge and development

# Scientific competence in the educaiton of medical students

”Quality in all elements”

- Subtopics
- Diciplinces
- Throughout all study years


How do we define scientific competence in education?

How is scientific competence highlighted in education?

How to highlight quality in scientific competence?

How do we evaluate quality in scientific competence?

How do we evaluate quality in teaching about scientific competence?

# Scientific approach –
# we can learn from the sports stars (?)

It's not about what you think and do in the arena (class), but what you do when you're not competing.
It's all about the hard-hitting invisible struggle of everyday life.
Exercising smart, exercising properly in each workout.
It makes winners over time!


Teaching – «the educational relay run»– it’s the sum of everyday input that makes «winners» at graduation!