CURRICULUM PLAN
INTERNATIONAL SEMESTER

MED-2520
INTERNATIONAL SEMESTER
30 ECTS

UiT THE ARCTIC UNIVERSITY OF NORWAY
FACULTY OF HEALTH SCIENCES
Description of the subject and the course elements
The course contains the reproductive organ system's normal structure and function and reviews pathological conditions. Lectures will cover common gynecological conditions and normal as well as complicated pregnancy and childbirth.

Learning plan:
Normal anatomy (including mammae), female and male reproduction physiology, normal pregnancy and birth are described. As a preparation to the clinical training outside the hospital, lectures will be given in the following subject areas: Infections, bleeding disturbances, benign and malignant tumors, pelvic organ prolapse, urinary incontinence, birth control counseling, abortion, infertility and the most common conditions and disorders of pregnancy.
During the last half-year of the study, a more practical-clinical approach to gynecologic/obstetric diagnosis and treatment will be taught.
For the international exchange students, a separate adequate practical-clinical education in ob/gyn will be given after the completion of theoretical part of the course.

After completing the course, the students shall:
- Have trained on gynecologic examination techniques and common procedures (e.g. taking a cervical smear, inserting and removing an intrauterine contraceptive device etc) in the skills laboratory.
- Know the basics about symphysis-fundal height measurement, auscultation of fetal heartbeat and Leopold’s maneuvers.
- Know how to diagnose and treat ordinary gynecologic conditions like infections, tumors, bleeding disorders during pregnancy and beyond.
- Be able to follow up a normal pregnancy and know how to identify high-risk pregnancies which need special attention and care.
- Be able to provide advice on contraceptives and know the paperwork around induced legal abortion.

Lecture description

1 session: Introduction
Presentation of the course: Textbooks. Practical implementation of clinical training. Practical rules about hygiene and sterility in the maternity ward and the operation rooms.

MORPHOLOGY

3 sessions: Female genitalia. Mammae.
The lecture includes a review of anatomy and histology of internal and external female genitalia with a detailed description of the vulva, vagina, cervix, uterus and adnexae.
Furthermore the innervation and blood supply to the same organs are reviewed, as well as embryological development and important malformations. Topography and anatomy of the pelvis with a detailed description of the pelvic floor, the pelvis (regarding obstetrics), and the course of major arteries, veins and important nerves that supply the genitalia are reviewed.

1 session: Development of the placenta and fetus
Review of the principles of development and growth of the placenta and fetal membranes. Detailed principles of the first weeks of fetal development with the formation of endo-, meso- and ectoderm including gastrulation and the principles of further growth.

3 sessions: Female genitalia and mamma pathology
Review of pathology:
- Diseases of the cervix with emphasis on the different types and stages of cervical cancer.
- Diseases of the uterus with emphasis on cancer of the endometrium.
- Diseases of the ovaries, with emphasis on various types of ovarian cancer.

4 sessions: Macroscopic anatomy – fetal development. Workshop.
2 sessions: Pathology, macro preparations. Workshop.
2 sessions: Anatomy. Microscopy workshop.
6 sessions: Morphology. Microscopy workshop.

PHYSIOLOGY

The lectures emphasize the adult human reproductive physiology, but the students should also know the gonad – pituitary – hypothalamic function in the life course (birth – puberty – menopause – aging.)

1 session: Gonadotropic hormones. General reproduction physiology
General reproduction physiology:
- General aspects of the gonadal gametogenesis, hormone synthesis and secretion.
- Gonadotropic hormones’ role in gonadal function, as well as pituitary and hypothalamic role in reproduction.

2 sessions: Female hormones and menstrual cycle
- General physiological effects of the gonadal steroid hormones estrogen and progesterone.
- Hormone receptor – localization in steroid hormone-sensitive cells, the intracellular effect of these hormones and the most pronounced effects on organ and on organism level.
- The ovary’s function including hormone production, maturation of ova, the interaction between the different cell types in the ovaries and through the ovarian cycle.
- Physiological changes through the menstrual cycle (uterine cycle).
- Control of the menstrual cycle.

1 session: Fertilization, pregnancy

Conception – fertilization
The students shall know the basic physiology related to sexual function in women and men, like the role of erectile vascular tissue (erection) and orgasm (ejaculation). They shall know what role the different parts of the nervous system plays (sympathetic, parasympathetic, and somatic efferent and afferent nerve fibers). The students shall learn the fundamental aspects of fertilization, related to the menstrual cycle, localization and implantation of the fertilized ovum and the conditions for retention of the fertilized ovum.

2 sessions: Placenta – amniotic fluid and placental hormones

Placental function
Placental physiology is reviewed with emphasis on hormone production and permeability conditions and barrier function. Including hCG, HCS, progesterone and estrogens, and several other bioactive substances, and the placental role in the interaction between mother and fetus (specifically the feto-placental unit). The amniotic fluid physiology including the amniotic fluid’s function and composition, production and absorption through the different stages of pregnancy.

1 session: Birth – lactation.

Birth:
The student shall know the physiological factors that promote or inhibit the contractile activity in the myometrium, such as:
- Oxytocin
- Prostaglandins
- Catecholamines

Lactation
The students shall know about the physiological events that lead to a fully developed mammary gland. They shall understand the physiological background for the interaction between mother and child during breastfeeding. In particular, they shall know the significance of the hormones prolactin and oxytocin and know about how the secretion of these is regulated, and the role of the pituitary-hypothalamic axis.

1 session: Male steroid hormones. Male reproduction physiology.

Male reproduction physiology
- General physiological effects of androgens.
- Hormone receptor – localization in steroid hormone-sensitive cells, the intracellular effect of these hormones and the most pronounced effects on organ and on organism level.
- The function of the testes as both endocrine organ and production site for sperm cells.
- The interaction between the sperm cell-producing epithelium and the Leydig cells.
- Sperm cell production and composition.

PHARMACOLOGY

1 session: Pain control during childbirth
A review of regional anesthesia with epidural, spinal and a combination of these, nitrous oxide, systemic opioids and local analgesics. The emphasis is on the pharmacological mechanism of action, effect, side effects in mother and child, interactions and contraindications. Other pain control methods are also mentioned.

1 session: Hormonal contraceptives, bleeding disorders
Review of the effects of estrogens and progestogens in the body. Action mechanisms, effects, side effects and interactions of combination preparations and pure progestagen preparations. Short description of pharmacological treatment of menorrhagia and metrorrhagia.

1 session: Drugs and pregnancy, drugs and breastfeeding, side effects.
The use of drugs during pregnancy is discussed, with respect to teratogenicity, the influence on the pregnancy and the treatment of the mother or fetus. Use of alcohol and narcotics during pregnancy is also reviewed. Furthermore, the use of drugs with respect to breastfeeding and crossing to the breast milk and the influence on the child. Alcohol use while breastfeeding is discussed, and the risks related to use of narcotics is also mentioned.

1 session: Remedies that affect contractions and lactation
Overview of drugs used to influence contractions or lactation, and drugs that have such affect as a side effect.

MICROBIOLOGY

2 sessions: Infections in female genitalia
The relevant organs’ natural protection mechanisms against infection and conditions that impair these mechanisms.
The main causes of microbial infections in the female genitalia, the types of infections they cause and the pathogenesis of these microbes, including microbial properties and transmission chain.
Relevant microbiological tests and principles of treatment and prevention.
Refer to other agents that cause infections and their most important characteristics. Brief description of the “Diseases Act”, regulations and guidelines for tracing the source of sexually transmittable diseases.

2 sessions: Practical microbiology. Workshop.
EPIDEMIOLOGY

Epidemiology as a tool in gynecologic cancer.
Norwegian Cancer Registry, design and use as a clinical tool.
Examples, trends, national and global relations.

ENDOCRINOLOGY

1 session: Male hypogonadism
Assessment and treatment of male hypogonadism and current research in this area.

RADIOGRAPHY

1 session: Overview of relevant radiological examinations in ob/gyn cases.
Review of relevant radiological investigations, indications and contraindications. Various modalities can be used depending on clinical case and other considerations, examples are shown.

1 session: Radiology workshop
The cases shown during the lecture are further discussed in the review of the cases and the actual examinations conducted during the assessment of the patients are reviewed. Assessment algorithms. Various modalities. Radiation considerations.

SURGERY

2 sessions: Breast cancer.
Assessment and survey methodology and strategic thinking in relation to whether there is cancer or not.

OBSTETRICS & GYNECOLOGY

2 sessions: Pelvic tumor. Benign tumors.
Description of the most common benign pelvic tumors. Myoma of the uterus: incidence, symptoms and treatment. Benign ovarian tumors: different types, characteristics to differentiate between benign and suspected malignant tumors.

2 sessions: Gynecological cancer
The most frequently occurring types of gynecological cancer, ovarian cancer, uterine body cancer and cervical cancer. Incidence, risk factors, symptoms, assessment, treatment and
prognosis of the various types of cancer. The stages of uterine and cervical cancer are also mentioned.

1 session: Gynecological cancer
Incidence, risk factors, symptoms, diagnostics and treatment of the most common types of gynecological cancer: Ovarian cancer, uterine cancer, cervical cancer.

2 sessions: Genital prolapse. Urinary incontinence.

2 sessions: Infections in female genitalia.
The student shall know about the most prevalent gynecological infections – mainly STDs. Causes, risk factors, diagnosis, treatment, prophylaxis.

2 sessions: Infertility
The student will obtain an overview on prevalence and treatment options concerning female/male/combined infertility. He/she shall know about the primary assessment and investigation of infertile couple and be able to give basic information on different methods.

2 sessions: Contraception
Review of different contraceptive methods with an emphasis on safety, user friendliness, side effects and contraindications for the different methods.

2 sessions: Contraception. Workshop.
Tasks and casuistics are discussed with a GP.

2 sessions: Menopause. Hormonal changes. Hormone substitution.
Definition of the concept. What happens in the pre- and post-menopause (endocrinologically), symptoms associated to that part of a woman’s life. Which of these symptoms can be treated, and how?.

2 sessions: Dysfunctional bleeding.
Brief review of a normal menstrual cycle. Causes of bleeding disorders and principles of treatment. Emphasis on the most common disorders such as amenorrhea, metrorrhagia and postmenopausal bleeding.
Abortion: The students shall know the causes, treatment, differential diagnoses, complications, whom to refer to the ER (emergency room) and who can wait a while. Counseling afterwards, possible assessment upon habitual abortions, know of septic abortion. Rhesus prophylaxis.

1 session: Abortion
The students shall know about Norwegian abortion history and legislation. They must know the paperwork, deadlines and which forms that must be completed. They must be able to provide basic information on methods (surgical and medical), complications, as well as counseling afterwards.

1 session: Prenatal diagnostics.
Indications for prenatal diagnosis and e the options.
Double test, triple test and nuchal translucency measurement are non-invasive examinations for risk assessment.
Amniotic fluid and chorionic villus sampling and what it can tell us.
Counseling and treatment of women carrying a fetus with malformations.
Treatment of some fetal diseases.

1 session: Teratogen exposure during pregnancy. Drugs, infections, radiation.
Common teratogens and their effects on embryonic and fetal development and function. Common mechanisms of teratogenicity. How to find information on teratogenicity and communicate that information to the patient. Drugs that are contraindicated and drugs that are safe in pregnancy.
Diagnostic radiation safety issues in pregnancy.
Management of pregnancies following teratogen exposure.

1 session: Pregnancy and diabetes.

1 session: Rhesus immunisation/thrombocyte pathology.
The students will be given an introduction on alloimmunization during pregnancy. Immunization against erythrocytes, especially Rh-immunization and against platelets (FNAIT) is reviewed. The following are emphasized: Routines for blood sampling and follow-up of Rh-negative pregnant women with and without antibodies. Indications and
principles for anti-D gamma globulin prophylaxis at birth, abortions, bleeding and invasive procedures are presented. Pros and cons of screening for FNAIT are discussed.

**2 sessions: Hypertension. Preeclampsia. HELLP-syndrome.**
Hypertensive pregnancy complications are defined. Management in prenatal care is emphasized, symptoms of serious illness are characterized, indication for hospital admission, antihypertensive treatment, monitoring of mother and fetus. Clinical presentation, signs and symptoms, laboratory tests and treatment of HELLP-syndrome and eclampsia are reviewed.

**1 session: Vaginal bleeding in the last trimester.**
Review of possible causes, diagnostics and appropriate measures for vaginal bleeding in late pregnancy, focus on placental abruption and placenta previa.

**1 session: Multiple births. Cesarean section.**
Twin pregnancies are reviewed. Differences related to zygosity and chorionicity are presented. Special circumstances that must be taken into account regarding pregnancy and childbirth monitoring and appropriate choice of delivery method are discussed. Presenting data on c-section, emergency and elective, indications for c-section, pros and cons for mother and child. Different views on self-determined c-section/co-determination are presented.

**1 session: Fetal growth and growth retardation.**
Definition of growth retardation. Significance, causes, diagnosis and appropriate management. Symphysis-fundal height measurement – performance and errors.

**1 session: Premature birth and birth during transportation.**
Definition, epidemiology, significance and possible actions regarding preventive measures and treatment. Birth during transportation: Epidemiology, risk factors. Practical advice in emergency aid situations.

**2 sessions: Prenatal care.**
The lectures are a collaboration between a general practitioner and a obstetrician where the goal is that the student understands the purpose of prenatal care. New guidelines for prenatal care are presented and routines for prenatal care GPs should know when it comes to both history taking and examination procedures are emphasized. The student must learn basic examinations like examination of the pregnant abdomen (Leopold’s maneuvers), listening for fetal heart sound and symphysis-fundal height measurement. It is focused on information the pregnant woman should receive, patient participation, multidisciplinary cooperation and reasons for referring to the specialist healthcare service.
2 sessions: Birth.  
The emphasis is on describing the normal birth. Focus on definitions of the different phases of the birth, birth mechanics in relation to pelvic anatomy, fetal size and rotations and the expulsion forces. Leadership and measures during birth are mentioned. It is important that the students understand the cardinal movements (rotations) in a normal birth in order to understand how abnormal birth progressions occur.

Definition and description of labor induction including various methods and when they are applied. Review of indications, contraindications and risks associated with induction of labor.  
Definition of the concept overdue (postdate, postterm), incidence and guidelines for follow-up and management of overdue pregnancies.  
Causes of intrauterine hypoxia, methods for detecting and managing the condition.  
Review of birth monitoring with a demonstration of partogram and practical examples of registering fetal heart sounds.

1 session: Puerperium.  
The most common symptoms and complications in the puerperium. Perineal tears, bleeding, infections, thromboembolic disorders and emotional problems. Diagnostics and principles for treatment.

2 sessions: Ethical issues in ob/gyn. Workshop.  
This is not an ordinary lecture, more a forum for discussion. The students are given several case histories where clinical issues in ob/gyn illustrate difficult ethical issues without a “definitive solution”, but the case will stimulate reflection and discussion around the ethics.

4 sessions: Sexology - workshops  
1 session: Gynecology  
The most common forms of sexual dysfunction in women. Hormonal influence. Which diseases that can contribute to sexual dysfunction. How to record a sexual anamnesis, and review of treatment options.

1 session: Urology  
Review on male genitalia and their function. A little about male sex hormones and their impact, and effect of hormonal deficiency.  

1 session: Clinical psychology
Causes and consequences of sexual dysfunction. Situations where this is appropriate to discuss in general practice.

1 session: Female circumcision
Definition of the concept. Background and geographical distribution. Norwegian legislation concerning the practice of circumcision.
Problems and complications related to circumcision. Preventive measures in general practice and specialist health care services.
Procedures for referral to a specialist and treatment of circumcised women.

1 session: Review of the course exam.

CLINICAL TRAINING
An introduction to examination techniques is given. Most of the practical skills will be acquired during the training in general practice, and in the hospital training in the Women’s Clinic in stage IV.
Foreign exchange students will have hospital training and bedside practical skills training at the end of course 14.

Gynecological examination techniques and some common gynecological procedures will be taught in the skills lab using instruction videos and training models.

Birth seminar with a mid-wife: Wednesdays 08.15 – 10.00

Prosector minor teaching in the evening in the skills lab by appointment. This is voluntary.

Extra teaching and training for the foreign students

The foreign student will in week 47 and 48 have additional clinical training with seminars in gynecology/obstetrics and pediatrics, covering subjects that the Norwegian students will obtain in other semesters.

TEXTBOOKS
Recommended:
Bergsjø, Maltau, Molne, Nesheim: “OBSTETRIKK OG GYNEKOLOGI”
ISBN: 82-05-30399-1

Foreign exchange students should use textbooks as advised by their respective home institutions.

APPROVAL
Participation in the skills lab is compulsory and must be confirmed on a specific form by the teacher.
Learning objectives: Pediatrics

**Attitudes**
The student should
1.1 acknowledge the child and its parents integrity and right to codetermination
1.2 be able to meet the child on a level adequate for the child
1.3 approach child health problems with a general, holistic understanding

**Skills**
The student should be able to
1.4 talk with a sick child and its parents in order to identify the child’s health problems and general state of health
1.5 perform a goal-oriented and systematic clinical examination of children at different age levels
1.6 make a joint evaluation from the history and clinical examination, suggest tentative diagnoses, and suggest further investigations and treatment of the most common symptoms in children
1.7 identify children with acute, severe disease and perform lifesaving treatments and investigations
1.8 communicate medical information in a way children and parents can understand

**Knowledge**
The student should be able to
1.9 account for the occurrence, causes, pathophysiology, symptoms and findings, diagnostic principles, treatment, follow-up, prognosis and ethical questions of the most common congenital malformations
1.10 identify and explain deviations from normal growth and psychomotor development, including the significance of malnutrition
1.11 account for the occurrence, causes, pathophysiology, symptoms and findings, diagnostic principles, treatment, follow-up, prognosis and ethical questions of the most common diseases in newborn children
1.12 account for the occurrence, causes, pathophysiology, symptoms and findings, diagnostic principles, treatment, follow-up and prognosis of the most common acute pediatric conditions.
1.13 account for the occurrence, causes, pathophysiology, symptoms and findings, diagnostic principles, treatment, follow-up and prognosis of the most common chronic pediatric conditions.
1.14 account for the significance of the psycho-social environment for the health of children, including the significance of neglect and physical and sexual abuse, and also account for possible interventions
1.15 describe characteristic features in preventive public health care for children, including the systematic newborn examination, the child health clinics, and the childhood vaccination program

Description of lectures
Lectures in pediatrics – MED-2520

1 session: What is pediatrics?
Children in relation to adults. Brief review of principal differences in physiology, anatomy and immunology. Review of the lectures and a presentation of different textbooks.

2 sessions: The unborn and newborn child
The lecture describes the normal morphological and physiological processes in the embryonic and fetal period that ensure the fetus’ capability to manage the transition from an intraterine, placenta-dependent life surrounded by amniotic fluid, to a lung-dependent postnatal life surrounded by air. Especially the development of the lungs, the onset of respiration, and the cardiovascular switch at birth will be stressed.

1 session: The clinical examination of children.
How to take a pediatric history and examine children of different ages.

4 sessions: Gastrointestinal diseases
Review of the most common symptoms in pediatric gastroenterology, such as diarrhea, constipation, abdominal pain, regurgitating/vomiting and malabsorption issues. Differential diagnostics, assessment and treatment. Important conditions like celiac disease, functional bowel disorders, inflammatory bowel diseases and gastroesophageal reflux will be reviewed comprehensively.

2 sessions: Plastic surgery in childhood
Several illnesses where surgery is important will be mentioned in the lecture. Lip/jaw/palate cleft, hypospadia, syndactyly, vascular malformations/hemangiomas, congenital nevi, microtia/aures alatae. Multidisciplinary approach, parental reactions, etc. are discussed.

2 sessions: Psychomotoric development and growth
During the first session, we will look at the development of psychomotor skills, senses and natural functions with emphasis on developmental patterns and milestones. In the second session we will look at growth with an explanation of growth charts and factors that regulate growth and the onset and progression of puberty.

2 sessions: Nutrition
Nutrition for healthy infants and toddlers. The need for nutrients and distribution of the nutrients. Diet in practice, with emphasis on the significance of milk in our traditional Norwegian diet. Formulas. What kids should eat to get the nutrients they need and what we know from recent surveys that children DO eat. General advice. Briefly about the increasing trend of abnormal weight gain in childhood, and its consequences for health later in life.

5 sessions: Infections in children
The immune system in children, respiratory infections, sepsis, bone and joint infections, fever, vaccination, use of antibiotics, penicillin allergy, HIV, hepatitis, tbc. Especially etiology, symptoms, diagnostics, sampling and treatment is reviewed.
2 sessions: Congenital malformations
A brief, general review of incidence of congenital malformations, as well as when in fetal life the different organs are developed. Thereafter a review of congenital malformations in the heart, mouth – gastrointestinal tract, kidneys and urinary tract, genitalia, central nervous system and musculoskeletal system. Viewing pictures of a variety of important malformations is an important part of the lecture.

2 sessions: Lifestyle diseases in children
Lifestyle and lifestyle diseases in children are reviewed. A special emphasis on trends in diet, physical activity and children’s and adolescent’s weight development. Obesity, metabolic syndrome and type 2 diabetes is reviewed in particular.

3 sessions: Asthma and other allergic diseases
Typical allergic diseases, epidemiology, immediate and late reactions, development of allergy, prophylaxis, allergens, symptomatology/diagnostics and treatment. Treatment and follow up of asthma.

2 sessions: Cerebral palsy, psychomotoric retardation
Diagnosis, causes, clinical forms, and treatment of CP and psychomotoric retardation.

2 sessions: Seizure disorders and headache
Causes and treatment of seizures and epilepsy, including febrile convulsions. Headache.

3 sessions: Diseases in the newborn
Review of jaundice in newborns, different causes and treatment. Infections and lung diseases in the newborn. Prematurity and complications such as brain hemorrhage and periventricular leukomalacia.

2 sessions: Sudden infant death syndrome, child abuse
Review of incidence, etiology, risk factors and practical handling of SIDS (in both primary and secondary care). Child abuse: Introduction to different types of child abuse; Shaken baby, physical violence (fractures/bruising/burns), sexual abuse, neglect, Munchausen by proxy (including homicide). Injury mechanisms and differential diagnoses. Obligation to notify child welfare/police.

2 sessions: Ethics and pediatrics
Using case reports that the students first discuss in groups, we have a plenary discussion in which ethical dilemmas in the case reports are discussed. Teachers comment on the discussion based on respectively clinical practice and a philosophical theoretical point of view.
**Workshops in the pediatric module – MED-2520**

**1 session: Emergency treatment of children**
Review on various acute serious diseases in children, and initial treatment of such conditions.

**1 session: Examination of children after infancy.**
Based on a case history, principles for anamnesis and clinical examination of children after infancy are reviewed. The importance of inspection/evaluation of the child before starting the physical examination is stressed. Differences from the examination of adults are emphasized, and practical tips and advice on how to examine a child is given.

**1 session: Allergy**
The child with breathing difficulties – emphasis on the importance of the case history in order to set a tentative diagnosis and to avoid serious misjudgments. Practical advice for the examination.

**1 session: Allergy**

**1 session: Examination of the newborn**
A newborn child from the Maternity ward is present and examined for demonstration of the newborn examination. The importance of visual inspection before disturbing the child with auscultation and palpation, and the importance of a systematic approach, are stressed. The practical examination is demonstrated and clinical comments are applied to what is seen, heard and felt. The workshop is an introduction to the practical training the students will be given by the pediatrician who examines newborns in the Maternity ward daily.

**1 session: Rashes**
Description of the rashes. Contagious childhood diseases.

**3 sessions: Public health centre tuition**
The goal of this tuition is to give the students experience and insight into healthy children's psychomotor development the first years of life. With emphasis on a systematic examination of the child, as well as conditions that can be detected by the public health centre examination (e.g. murmurs, hip failure, lack of red reflex, strabismus, developmental delay, ++). Motor milestones are reviewed in particular. The students examine children under supervision of a physician from the pediatric ward.
2 sessions Infections in an international setting. The global burden and challenges of infectious diseases in different parts of the world: global warming, antibiotic resistance, tbc, HIV, parasitic infections, travel etc.

Practical training in pediatrics

In MED-2520 the students should during the rotational period in pediatrics:

1. Attend one 2-hour clinical training (“clinic”)
2. Attend outpatient clinic before lunch (1 day)
3. Follow the on-duty resident (1 shift)
4. Attend a maternity round (1 day)
5. Attend a public health centre check-up (4 children: 6 weeks old, 3 months old, 6 months old and 1 year old. All in one day).

Extra teaching and training for the foreign students

The foreign student will in week 47 and 48 have additional clinical training with seminars in gynecology/obstetrics and pediatrics, covering subjects that the Norwegian students will obtain in other semesters.

Textbooks and curriculum

Basic textbook in pediatrics (for both 4th and 6th year):

Klinisk pediatri 2. utgave 2009
Trond Markestad
Bergen: Fagbokforlaget

Curriculum for 4th year exams: Chapter 1 – 18, 22 and 26.
In addition, everything presented in lectures, at workshops, and the clinical training, is also curriculum.

Foreign exchange students should use textbooks as advised by their respective campuses.
International semester (MED-2520), MEDICAL GENETICS

Responsible: Department of clinical medicine (IKM), Valeria Marton

Prerequisites: it is necessary to have passed MED- 300, or corresponding (Norwegian students)

Duration: Ten lectures of one hour. Three hours of clinical practice where the students are divided into six groups.

Statement of aims:
The lectures in MED-2520 must be considered as a development of previously acquired knowledge of the basic parts of the field of genetics, and as a movement towards a more clinically focused part of the field. The basic part of the subject is based on the lectures from MED 100, while the clinical part of the lectures includes illnesses that illustrate the need for a good basic comprehension to understand different clinical aspects of genetics.

This list of knowledge and skills includes what is expected of the students after completing the lectures and clinical duties in MED- 2520.

Knowledge and skills:
The students are expected to know how to:

1) record a relevant history including family-history
2) consider, and inform about the relevant inheritance
3) consider, and inform about all available prenatal diagnostic options
4) know about the most common inheritable disease groups
5) know about the main types of tests for chromosome- and DNA abnormalities
6) know about the procedures of clinical genetic examination and dysmorphology
7) The student should be able to account for the occurrence, causes, pathophysiology, genetically background, symptoms and findings, diagnostic principles, follow-up, prognosis and ethical questions of the most common genetic disorders.
8) The student should be able to talk with a sick person and its family in order to identify the genetically health problem.
9) The student should be able to perform a goal-oriented and systematic clinical genetic examination of patients.
10) The student should be able to make a joint evaluation from the history and clinical genetically examination, suggests tentative diagnoses, and suggests further investigations and treatment of the most common genetically disorders.
11) The student should be able to communicate medical genetic information in a way patients can understand.
A more detailed description of the theoretical aims is listed below:

- Mitosis, meiosis
- Nondisjunction
- The molecular basis of our inheritance (bases, exons, genes, chromosomes)
- The difference between DNA and chromosomes
- The difference between autosomes and sexchromosomes
- Karyogram
- Karyotype, simple nomenclature
- Indications for performing a chromosome analysis
- Inherited and non-inherited chromosome abnormalities
- Definition, types of (trisomy, monosomy), as well as clinical examples (diseases) of numerical chromosome abnormalities
- Definition, types of (translocation, deletion etc) as well as clinical examples of structural chromosome abnormalities
- At least three clinical examples of sex chromosome abnormalities
- The frequency of chromosome abnormalities
- Reasons for analysing for chromosomal diseases
- Purposes of prenatal diagnostics
- Indications of prenatal diagnostics
- Invasive prenatal diagnostic methods (amniocentesis, CVS, PGD) including the procedure, risks, processing-time, possible sources of error etc
- Non-invasive methods (ultrasound, double test, triple test) including the procedure, risks, processing-time, possible sources of error etc
- Information given prior to performing the tests
- The definition of a mutation
- The definition of polymorphism
- Different types of point mutations
- Gene deletion
- The definition of restriction enzymes, primer, probe
- Different types of DNA analysis: PCR, Southern blot, sequens analysis, MLPA
- The definition of diagnostic -, presymptomatic- and predictive analysis
- Genetic counselling
- Draw a genogram
- Mendelian inheritance: autosomal recessive, autosomal dominant, X-linked recessive
- Atypical Mendelian inheritance: mitochondrial inheritance, dynamic mutations, imprinting, somatic mutations
- Give examples of at least three diseases in the beforementioned types of inheritance
- The definition of penetrance, expressivity
- The definition of anticipation
- Germline mosaicism
- The Norwegian Biotechnology Act (law on medical usage of biotechnology)
- Hereditary cancer: breast and ovarian cancer, HNPCC, FAP
- hereditary/genetic muscle disorders
- hereditary/genetic metabolic diseases
- Syndromology: definition, processes of clinical genetic examination
Lesson description:

Lectures:

Session 1 and 2:
- General description of the subject; its plan and contents
- Chromosomal diseases: clinical examples are used to illustrate various chromosomal aberrations
- Repetition of basic genetic mechanisms in connection with these disorders.

Session 3 and 4:
Prenatal diagnostics (PND): Indications for PND, different types of PND. Including the procedure, processing time, possible sources of error etc.

Session 5 and 6:
Changes in DNA which lead to disease are illustrated by various hereditary disorders.
- Repetition of basic genetic mechanisms associated with DNA changes and different types of DNA analysis.
- Mendelian inheritance
- Atypical Mendelian inheritance

Session 7 and 8:
Atypical Mendelian inheritance continues.
- Hereditary cancer
- Hereditary muscle disorders
- Syndromology and dysmorphology

Session 9 and 10:
- Clinical cases are used to illustrate the most important parts of the curriculum in medical genetics, MED 400. Mainly presenting of cases of syndromes with pictures, clinical history etc.

Clinical practice at the hospital

- Review of the case presentations (the students will beforehand discuss these in groups).

- Procedures of clinical genetic examination, dysmorphology

Examination:
MED-2520 Everyone is tested in medical genetics in a written examination.

Literature:
Thompson & Thompson: *Genetics in Medicine*, 2012.
GERIATRICS

**Responsible:** Torgeir Engstad  
**Clinical duties:** Meet at Geriatric section Monday – Thursday at 09.00. More detailed information on the contents of the clinic will be handed out later.

**LEARNING OUTCOME.**

This course in geriatrics is aimed at giving students an understanding of the normal aging process and how growing older affects the body and soul. The students will also get an insight into special diseases which are common at an older age, and how diseases in general affect the old. The common symptoms of illness are often different in older people than in younger, and there will be a focus on the interaction between the aging process and illness. There will be emphasis on getting the students into contact with geriatric patients so they can get the opportunity to talk to, and examine older people. One seeks to give the students knowledge about the normal length of life and the natural death, and how disease can shorten the normal lifespan of an individual. The students will gain insight into how the health system for the elderly is built up, and they will get an impression of the interdisciplinary cooperation that lies behind giving elderly people a chance at the best physical level possible after being stricken by illness.

This teaching also aims at giving students insight into ethical questions surrounding the terminal phases of life, resuscitation, and when to treat or not to treat older patients etc. The students will learn about the different methods of measuring and physical examinations used in geriatrics, and they are expected to learn how to use some of these. They will also get an insight into treatment options for ill old people, the indications, assessment of risk and prognosis, as well as basic knowledge of medication of geriatric patients.

More concretely, when it comes to diseases of the elderly, we wish that the students:

**Apprehension 1:** be able to understand that illness in the elderly  
- have other symptoms than in young people  
- Often results in loss of function

**Skills**

1. be able to  
- examine a geriatric patient  
- assess the level of loss of function  
- plan patient rehabilitation  
- plan further actions

2. Know about  
- Scales of assessment and function instruments.

**Specifically on dementia:**
1. Be able to
- define dementia
- understand the difference between dementia and confusion.

2. Know about
- Differential diagnostics
- Options of treatment.

Skills 1. Be able to
- assess patients for dementia.
2. know about
- more special examinations

Pharmaceuticals and the elderly:
Apprehension 1: Know about
- drug metabolism in the elderly
- problems of side effects
2. Know about
- the most common interactions
- Problems with handling medication and how to make treatment secure

Skills 1. On their own be able to
- review lists of medication and if necessary suggest discontinuation.

Care at the end of life of elderly
Apprehension 1: Know about
- Pain management
- Other forms of medical treatment and care.
2. Know about
- When and how to refrain from or discontinue treatment
- Options for patients and their next of kin.
Skills 1: On their own be able to
- give treatment at the terminal phase of life.

LESSON DESCRIPTION - GERIATRICS

Session 1-2:
Aging and aging theory
What is aging, and why does it happen? Theories on this. What is the normal life span and what is the normal death? How does aging occur on the level of the individual, the cell, and what physical, psychological and functional changes does this entail?

Session 3-4:
Special illnesses of old age.
Disease presentation – symptoms in the elderly, diseases which especially appear with age, function examinations.
**Session 5-6:**
Urinary tract conditions in the elderly.
Incontinence- stress and urge, infections, the significance of pyuria and bacteriuria, when to treat, urine retention(ischuria), specific conditions in women and in men.
Session 7-8:
Cardiovascular diseases and the elderly.
Normal aging of the cardiovascular system, high and low blood pressures in the elderly, heart disease in the elderly, their manifestations, symptoms, treatment.

Session 9-10
Acute stroke
Risk factors, aetiology, types of stroke, manifestations, acute treatment and further management.

Session 11-12
Rehabilitation after stroke.
The advantage of a stroke unit and an interdisciplinary approach in giving the stroke patient the best possible outcome. A demonstration of interdisciplinary cooperation.

Session 13.
Pharmaceuticals and the elderly.
See curriculum for pharmacology.

Session 14-15.
The brain and the elderly.

Session 16-17.
Degenerative illnesses like dementia and Parkinson’s disease, confusional states in the elderly.

Session 18-19.
Depression. About the occurrence of depression in elderly people, their symptoms and treatment.

Session 20-23.

Session 24-25.
Current geriatric clinic
A particular example of illness is portrayed and discussed.

Session 26-27.
Clinic: Falls.

Session 28-29.
Clinic. A particular example of illness is portrayed and discussed.

Session 30-31.
Clinic.
Learning outcome for the lectures in Health Promoting Factors

Responsible: Tore Sørlie

Theoretical aims:
The student should have acquired knowledge of a holistic health / disease perspective and theories of health behavior change and the importance of behavior, cognition and emotion may have on health and disease. They should have knowledge about the concept of patient satisfaction and its impact on treatment and disease progression. Students will learn the somatic expression of psycho-social problems, psychological reactions to physical illness and psychological determinants of physical illness and treatment. They should be familiar with examples of how psychological intervention can improve treatment results and prognosis of somatic diseases.

1-2 lessons:
The patient's experience of illness and treatment, physician - patient relationship. Patient-centered approach - some examples.

3-4 lessons:
The biopsychosociocultural disease model and the stress-vulnerability model, how can cultural factors and psychosocial problems be expressed as somatic phenomena? Bodily expression of underlying psychosocial issues, is patient satisfaction is health promoting?

5-6 lessons:
The importance of different perspectives on health and illness, importance of behavior, cognition and emotion on health and illness, motivation for changing behavior, coping, self-regulation and quality of life, social relationships and health.

Literature:
Litteratur
Mead and Bower. Patient-centeredness: a conceptual framework and review of the empirical literature. Social Science & Medicine, 2000; 51:1087-1110
Nerum, H., Halvorsen, L., Sørlie, T., & Øian, P.: Maternal request for caesarean section due to fear of birth can be changed through crisis-oriented counseling. Birth 2006, 33, 221-228.


Learning outcome: “Challenges and development crises in the adult life”

Responsible: Tore Sørlie

6 lessons

The teaching aims to provide students with knowledge of the typical challenges of life for 20-30 years of age (moving away from home, solitude and community, challenges related to work and study), in 30-40 years of age (creating life versus selfishness, the offending reality, to be parents, role conflict and sexual problems, not to find a partner), in 40-50 years of age (40-year crisis, “menopause myth”), in 50-67 years of age (aging processes, generational differences, problems in the workplace) and in conjunction with old age and impending death (to quit work, illness, social disconnection and isolation, fear of death).

The central message of these lessons is that coping with most of these life challenges vary and are often accompanied by emotional reactions are normal and meaningful signs of maturation and growth.

Students will gain insight into the individual's coping and reaction in the light of current circumstances, the cultural tradition that the individual is a part of and the resources it has access to both within themselves and in their networks.

Students will also learn about how earlier unprocessed life experiences and problems may help to characterize the encounter with new challenges and could give rise to psychological problems or maturation and growth depends on how the individuals using its own resources and the network can handle the situation.

Lesson 1-2
The borderline between normality and pathology.
Factors that affect the individual's mastery of crisis reactions.
Pure and overdetermined crisis reactions.

Lesson 3-4
Important life challenges from late adolescence to 50 years of age

Lesson 5-6
Important life challenges from 50 years of age to impending death

Literature: