STUDY GUIDE

Preparation for the

THEORETICAL EXAM in

„ADVANCED SURGICAL SKILLS”

Institute of Surgical Research, University of Szeged

Authors:
Dr. habil. Andrea Szabó
Dr. Marietta Zita Poles
Prof. Dr. Mihály Boros

Further contributors:
Dr. Dániel Érces
Dr. Petra Hartmann
Dr. Tamara Horváth
Dr. László Juhász
Dr. József Kaszaki
Attila Rutai
Dr. Szabolcs Péter Tallósy
Dr. Gabriella Varga

Reviewed by:
Dr. Kornél Kovách
(Department of Surgery, University of Szeged)

Proofread by:
Thomas Williams

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Szegedi Tudományegyetem
Cím: 6720 Szeged, Dugonics tér 13.
www.u-szeged.hu
www.szechenyi2020.hu

Contents

Advanced Surgical Skills – lecture (course)

Introduction

Summary of aims and learning outcomes
The aim of the subject (Advanced Surgical Skills lectures and practices combined): teaching basic surgical techniques, invasive interventions and advanced surgical knowledge to medical students interested in different surgical specialties. Acquired competence: By applying principles of asepsis, the student is autonomously able to perform minor surgical interventions, bowel and vessel anastomoses, tracheostomy and laparotomy, and routinely uses traditional and minimal invasive surgical instruments under simulated sterile operating conditions

Courses: No 1 lecture (AOK-KA1461, 2 credits, 7 x 2 hours); No 2 practice (AOK-KA1462, 6 x 90 min, 0 credit) (based on individual group schedule)

Schedule and topics: lectures

Week	Programme	Monday 17.00-18.30	Lectures
1	Lecture	Lecture 1	Basics of surgical asepsis and surgical procedures
2	Lecture + Practice	Lecture 2	Minor surgical procedures
3	Lecture + Practice	Lecture 3	Conicotomy, tracheostomy
4	Lecture + Practice	Lecture 4	Basics of abdominal surgery, incisions, laparotomy
5	Lecture + Practice	Lecture 5	Advanced surgical techniques: enterotomy, bowel- and vessel anastomoses.
6	Lecture + Practice	Lecture 6	Advanced laparoscopic procedures
7	Lecture + Practice	Lecture 7	Basics of thoracic and cardiac surgery
8			
9			
10			
11		Autumn break	
12			
13			
14			
15			

Lectures (Albert Gellért Education Center, Kossuth Lajos avenue 35.)
Practices: (Institute of Surgical Research, Pulz str. 1., Szeged)

Methods of preparation for the theoretical exam

ad 1. Lectures: theoretical basics: traditional or online lectures (preparation for the test exam: based on a textbook „Surgical Techniques", see below)

Contact hours: 7 x 2 hrs (lectures on the first 7 weeks of the semester, on Mondays 17.00-18.30)
Place: Albert Gellért Education Center, Kossuth Lajos avenue. 35. Szeged, and CooSpace

Topics of the lectures:
1. Basics of surgical asepsis and surgical procedures
2. Minor surgical procedures
3. Conicotomy, tracheostomy
4. Basics of abdominal surgery, incisions, laparotomy
5. Advanced surgical techniques: enterotomy, bowel- and vessel anastomoses.
6. Advanced laparoscopic procedures
7. Basics of thoracic and cardiac surgery

ad 2 Consultation (personal and online consultation with the lecturers) (Institute of Surgical Research, University of Szeged):
Prof. Dr. Mihály Boros (Head of the Department) boros.mihaly@med.u-szeged.hu
Dr. habil. Andrea Szabó (Associate Professor) szabo.andrea.exp@med.u-szeged.hu
Dr. Petra Hartmann (Assistant Professor) hartmann.petra@med.u-szeged.hu
Dr. Dániel Érces (Assistant Professor) erces.daniel@med.u-szeged.hu
Dr. Szabolcs Ábrahám (Assistant Professor, Department of Surgery) abraham.szabolcs@med.u-szeged.hu
Dr. Gábor Bari (Assistant Professor, Department of Cardiac Surgery) bari.gabor@med.u-szeged.hu

ad 3. Compulsory literature:
Lectures uploaded to CooSpace (ppt)
Mihály Boros: Surgical Techniques. Textbook for medical students. Innovariant Ltd., Szeged, 2006. ISBN 963 482 785 3.
M. Boros (ed.): Practical Skills Syllabus. Innovariant Ltd., Szeged, 2008

ad 4. Recommended literature:
Tutorial videos uploaded to CooSpace (wmv):
Surgical scrubbing and hospital hand disinfection
Methods of surgical gowning and gloving
Techniques of surgical (hand- and instrument-tied) knotting
Advanced surgical knotting techniques
Basic surgical suturing methods
Laparotomy and closure of the abdominal wound in multiple layers in vivo
Cleansing and isolation of the operative field. Positions held in the OR.
Basic laparoscopic coordination exercises
Basic laparoscopic suturing and knotting techniques
Minor skin procedures
Tracheostomy *in vivo*
Anastomosis techniques (vessel- and bowel anastomoses)

1.1. Course description

Milestone:	**Milestone code:**
Subject: Advanced Surgical Skills	**Milestone code: AOK-KA1460**
Course: Advanced Surgical Skills lecture	**Course code: AOK-KA1461**

Course credit:	**2**
Form of course completion:	**evaluation (5-grade)**
Type of course:	**lecture**
Characteristics of course:	**traditional classroom lectures or online lectures**
Recommended term of completion:	**autumn term**
Frequency of announcement of course:	**once a year**
No of course hours: - contact: - individual:	**- contact: 7x2 hours** **- individual: 24.5 hours**
No of course hours weekly:	**1**
Language of course:	**English**
Department offering course:	**Institute of Surgical Research, University of Szeged**
Name and contact information of person in charge of course:	Prof. Dr. Mihály Boros boros.mihaly@med.u-szeged.hu
Name and contact information of course instructors:	Prof. Dr. Mihály Boros (Head of the Department) boros.mihaly@med.u-szeged.hu Dr. habil. Andrea Szabó (Associate Professor) szabo.andrea.exp@med.u-szeged.hu Dr. Petra Hartmann (Assistant Professor) hartmann.petra@med.u-szeged.hu Dr. Dániel Érces (Assistant Professor) erces.daniel@med.u-szeged.hu Dr. Szabolcs Ábrahám (Assistant Professor, Department of Surgery) abraham.szabolcs@med.u-szeged.hu Dr. Gábor Bari (Assistant Professor, Department of Cardiac Surgery) bari.gabor@med.u-szeged.hu

1.1.1. Aim of the course

Teaching basic surgical techniques, invasive interventions and advanced surgical knowledge to medical students interested in different surgical specialties.

1.1.2. Expected learning outcomes

List of acknowledged competencies provided by course

Expected learning outcomes (competency evaluation sheet)
(***the present guide covers items marked in boldface***):

Knowledge (lecture)	**Skills (practice)**	**Attitudes (practice)**	**Autonomy-responsibility (practice)**
The student familiar with the principles, instruments and methods of surgical knotting and wound closure. The student is aware of the related complications and the consequences of any misconduct.	The student properly applies surgical suture types (simple interrupted, vertical mattress suture, continuous and intracutaneous sutures). Handles instruments properly, and performs sutures in compliance with the regulations (good clinical practice) of the related surgical profession, in the right order and with proper timing.	The student is ready to adhere strictly to the principles of asepsis. The student is ready to perform all procedures precisely and in a self-disciplined manner. Owing to a self-reflective attitude, the student improves any misconduct during implementation.	The student performs surgical sutures autonomously under simulated and clinical operating conditions (if requested by a surgeon).
The student familiar with the principles, basic instruments and methods of local anaesthesia and of minor surgical procedures. The student is aware of the related complications.	The student properly handles surgical instruments and performs interventions of minor surgical procedures (eclipse excision and cyst removal) in compliance with the regulations (good clinical practice) of surgery.	The student is ready to adhere strictly to the principles of asepsis. The student is ready to perform all procedures precisely and in a self-disciplined manner. Owing to a self-reflective attitude, the student improves any misconduct during implementation of local anesthesia and minor surgical procedures.	The student performs local anaesthesia and minor surgical procedures autonomously under simulated operating conditions.

The student is familiar with the principles, materials and methods of advanced suturing techniques (including bowel and vessel anastomoses), and is aware of the related complications.	The student properly handles instruments and performs procedures of bowel and vessel anastomoses in compliance with the regulations (good clinical practice) of surgery.	The student is ready to adhere strictly to the principles of asepsis. The student is ready to perform all procedures precisely and in a self-disciplined manner. Owing to a self-reflective attitude, the student improves any misconduct during implementation of bowel and vessel anastomoses.	The student performs bowel and vessel anastomoses autonomously under simulated operating conditions.
The student is familiar with the principles, instruments and technical background of minimally invasive surgery. The student knows the different types of laparoscopic interventions and the related complications.	The student properly handles basic instruments of minimally invasive surgery. The student shows proper eye-hand coordination skills and properly carries out basic laparoscopic manoeuvres under simulated conditions. The student is able to perform complex procedures (stitching, knotting) under simulated conditions in compliance with the regulations (good clinical practice) of surgery, with optimal timing.	The student is ready to adhere strictly to the principles of asepsis. The student is ready to perform all procedures precisely and in a self-disciplined manner. Owing to a self-reflective attitude, the student improves any misconduct during implementation.	The student handles instruments of minimally invasive surgery routinely and performs laparoscopic (intracorporeal) stitching and knotting autonomously under simulated operating conditions.
The student is familiar with the materials and methods of surgical	The student handles surgical bleeding, and performs	The student is ready to adhere strictly to the	The student is able to perform basic surgical

incisions and of bleeding management. The student knows the principles, instruments and methods of tracheostomy and laparotomy and is aware of the related complications.	tracheostomy and laparotomy and abdominal wound closure under simulated operating conditions in compliance with the regulations (good clinical practice) of surgery, in the right order and with proper timing	principles of asepsis. The student is ready to perform all procedures precisely and in a self-disciplined manner. Owing to a self-reflective attitude, the student improves any misconduct during implementation of surgical bleeding, tracheostomy and laparotomy.	interventions under supervision. The student handles surgical bleedings and performs wound closure autonomously under simulated operative conditions. The student participates at the above procedures in clinical situations (as a member of the operative team) under supervision of (if requested by a surgeon).

1.1.3. Prerequisites for course registration

Criteria for completing the course: prerequisite of theoretical exam is the attendance of a minimum of 75% of the practices.

1.1.4. Course content (main topics) – thematic units

1. Basics of asepsis and surgical procedures
2. Minor surgical procedures
3. Conicotomy, tracheostomy
4. Basics of abdominal surgery, incisions, laparotomy
5. Advanced surgical techniques: enterotomy, bowel- and vessel anastomoses.
6. Advanced laparoscopic procedures
7. Basics of thoracic and cardiac surgery

1.1.5. Course schedule

Contact hours			Individual learning process	
Week	**Hours**	**Content**	**Hours**	**Content**
1	**2**	**Lecture 1:** Basics of asepsis and surgical procedures	**2**	Individual preparation for practices held in weeks 2–7 Preparation for the test exam: Sources: - Surgical Techniques textbook (pp 9-21) - Answering self-assessment questions (see later) - Studying lecture “Basics of asepsis and surgical procedures” uploaded to CooSpace - Studying the following tutorial videos uploaded to CooSpace (wmv): Surgical scrubbing and hospital hand disinfection Methods of surgical gowning and gloving Cleansing and isolation of the operative field. Positions held in the OR.

	2	**Lecture 2:** Minor surgical procedures.	**2**	Individual preparation for practices held in weeks 2–7 Preparation for the test exam: Sources: - Practical Skills Syllabus (pp 9, 41-42) - Answering self-assessment questions (see later) - Studying lecture “Minor surgical procedures” uploaded to CooSpace - Studying the following tutorial videos uploaded to CooSpace (wmv): Techniques of surgical (hand- and instrument-tied) knotting Advanced surgical knotting techniques Basic surgical suturing methods Minor skin procedures
3	**2**	**Lecture 3:** Conicotomy, tracheostomy.	**2**	Individual preparation for practices held in weeks 2–7 Preparation for the test exam: Sources: - Surgical Techniques textbook (pp 113) - Practical Skills Syllabus (pp 44-45) - Answering self-assessment questions (see later) - Studying lecture “Conicotomy, tracheostomy” uploaded to CooSpace - Studying the following tutorial videos uploaded to CooSpace (wmv): Tracheostomy *in vivo*

4	**2**	**Lecture 4:** Basics of abdominal surgery, incisions, laparotomy.	**2**	Individual preparation for practices held in weeks 2–7 Preparation for the test exam: Sources: - Surgical Techniques textbook (pp 91-97) - Practical Skills Syllabus (pp 43) - Answering self-assessment questions (see later) - Studying lecture "Basics of abdominal surgery, incisions, laparotomy" uploaded to CooSpace - Studying the following tutorial videos uploaded to CooSpace (wmv): Laparotomy and closure of the abdominal wound in multiple layers *in vivo*
5	**2**	**Lecture 5:** Advanced surgical techniques: enterotomy, bowel- and vessel anastomoses.	**2**	Individual preparation for practices held in weeks 2–7 Preparation for the test exam: Sources: - Surgical Techniques textbook (pp 101-103) - Practical Skills Syllabus (pp 42) - Answering self-assessment questions (see later) - Studying lecture "Advanced surgical techniques: enterotomy, bowel- and vessel anastomoses" uploaded to CooSpace - Studying the following tutorial videos uploaded to CooSpace (wmv): Anastomosis techniques (vessel- and bowel anastomoses)

6	**2**	**Lecture 6:** Advanced laparoscopic procedures.	**2**	Individual preparation for practices held in weeks 2–7 Preparation for the test exam: Sources: - Surgical Techniques textbook (pp 114-120) - Answering self-assessment questions (see later) - Studying lecture “Advanced laparoscopic procedures” uploaded to CooSpace - Studying the following tutorial videos uploaded to CooSpace (wmv): Basic laparoscopic coordination exercises Basic laparoscopic suturing and knotting techniques
7	**2**	**Lecture 7:** Basics of thoracic and cardiac surgery.	**2**	Individual preparation for practices held in weeks 2–7 Preparation for the test exam: Sources: - Answering self-assessment questions (see later) - Studying lecture “Basics of thoracic and cardiac surgery” uploaded to CooSpace
8			**1**	Recap: reviewing self-assessment questions related to Lecture 1 (see later)
9			**2**	Recap: reviewing self-assessment questions related to Lectures 2 and 3 (see later)

10			**2**	Recap: reviewing self-assessment questions related to Lectures 4 and 5 (see later)
11.		Autumn break		
12			**1**	Recap: reviewing self-assessment questions related to Lecture 6 (see later)
13			**1**	Recap: reviewing self-assessment questions related to Lecture 7 (see later)
14			**2**	Recap: reviewing self-assessment questions related to Lectures 1-4 (see later)
15			**1.5**	Recap: reviewing self-assessment questions related to Lectures 5-7 (see later)

1.1.6. Educational methodology used
Individual learning process

1.1.7. Further approaches used
Studying online materials for workshops as well as tutorial videos
Personal and online consultation with lecturers

1.1.8. Mid-year study requirements
Attendance of lectures is recommended.
Attendance a minimum of 75% of the practices.

1.1.9. Monitoring and evaluation of acquired knowledge and competencies
Continuous:
The prerequisite for the theoretical examination is the attendance of a minimum of 75% of practices.
Final:
Theoretical exam: evaluation (5-grade; single choice, multiple choice and true/false type questions).
Evaluation of acquired skills: Grading: five-grade evaluation mark.
Grading:
Excellent (5): ≥ 85% (theoretical test exam)
Good (4): 84–75% (theoretical test exam)
Average (3): 74–65% (theoretical test exam)
Pass (2): 64–50% (theoretical test exam)
Fail (1): ≤ 49% (theoretical test exam)

1.1.10. Technical foundation required for teaching and learning the subject
Traditional classroom with a projector or stabile internet connection.

1.1.11. Quality improvement methods and development policy
Regular consultation with the instructors for the course and also with those teaching other subjects built on the skills acquired during the present course.
Continuous monitoring and incorporation of new scientific results into the curriculum, taking the expected competencies of the profession into account.
Use of modern teaching-learning strategies, modern work strategies and teaching methods to support the teaching-learning process (e.g. through high-quality instructional videos).
Results of (1) “student feedback on lecturers’ teaching activity” questionnaires completed by students at the end of the semester and (2) the students’ performance during the exams is carefully considered when shaping the curriculum content, also including changes in emphasized topics, and in skill development methods.

1.2. Thematic units

1.2.1. Thematic unit 1 – Lecture 1: Surgical asepsis and basic surgical techniques

1.2.1.1. Study tasks

Content:
Main topic: Surgical asepsis and basic surgical techniques
List of subtopics: List of subtopics: Historical background. Surgical infections, sources of infections. Types, classification, risks and prevention of wound contaminations. Sterilization, disinfection. Preparation of the patient before operation: scrub preparation and isolation of the surgical site. Scrubbing, disinfection, gowning and gloving of the operating team. Personnel attire and movement. Basic rules of asepsis in the operating room. Postoperative wound management. Surgical antisepsis. Design and equipment of the operating room, basic technical background. Operating room personnel and their duties. Positioning of the patient on the operating table.

Learning outcome of thematic unit:
The student is able to perform surgical scrubbing, gowning and gloving in strict compliance with asepsis regulations (good clinical practice), in the right order and with proper timing under simulated conditions.
The student recognizes the need for hand disinfection autonomously and performs it in compliance with current medical regulations (good clinical practice requirements). The student adequately performs the procedure with optimal timing in the hospital (during patient examination and medical intervention, e.g. injection).
The student actively participates in cleansing isolation of the surgical area in compliance with relevant surgical regulations (good clinical practice), in the right order and with proper timing under simulated conditions.

Background/Resources:
Study materials (handouts, textbooks or other resources):
Compulsory:
- Surgical Techniques textbook (pp 9-21)
- Studying lecture “Basics of asepsis and surgical procedures” uploaded to CooSpace
Recommended:
- Studying the following tutorial videos uploaded to CooSpace (wmv):
Surgical scrubbing and hospital hand disinfection
Methods of surgical gowning and gloving
Cleansing and isolation of the operative field. Positions held in the OR.

Contact hours			Individual learning process		
Week 1 **90 min**	Active participation in the lecture / online lecture	Active participation, questions for lecturer, discussion of possible problems	**2 x 60 min**	**Study activity:** - Studying relevant parts of textbook (Surgical Techniques, pp 9-21) - Studying lecture "Basics of asepsis and surgical procedures" uploaded to CooSpace	**Special instructions:** - Studying the following tutorial videos uploaded to CooSpace (wmv): Surgical scrubbing and hospital hand disinfection Methods of surgical gowning and gloving Cleansing and isolation of the operative field. Positions held in the OR. - Answering self-assessment questions (see later)
Week 8			**60 min**		Recap: reviewing self-assessment questions related to Lecture 1 (see later)
Week 14			**30 min**		Recap: reviewing self-assessment questions related to Lecture 1 (see later)

1.2.1.2. Self-assessment questions

1. What is the difference between surgical asepsis and antisepsis?
2. What interventions do we perform to achieve asepsis in the surgical practice?
3. What is the definition of nosocomial infection?
4. How can wound infections be classified?
5. Which are the risk factors of wound contamination?
6. What is the definition of sterilization? Which are the sterilization methods used in surgery?
7. What is the definition of disinfection? What are the main types of disinfectants?
8. In compliance with the rules of asepsis, how the patient's skin is prepared for operation?
9. What kind of personal attire can be worn in the operating room?
10. Why and how to wear a surgical cap and mask?
11. What are the main steps of surgical scrubbing and gowning?
12. How should we putting on and remove the surgical gowns?
13. Surgical gown: which parts are considered as sterile and which parts cannot be regarded as sterile?
14. How gloving is performed before surgery? How to remove surgical gloves?
15. What is the purpose of the isolation of the operative field? How to move surgical isolating drapes if necessary?
16. What are the rules of personal movements in the surgical theatre after scrubbing and when wearing sterile clothing?
17. What are the responsibilities of the surgeon and the scrub during surgery?
18. What are main positions of surgical patient on the operating table?

1.2.1.3. Self-evaluation based on self-assessment questions

Maximum number of points: 18. Successful completion requires completion of at least 60% (11 points).
0–10 points: fail (1)
11-12 points: pass (2)
13-14 points: average (3)
15-16 points: good (4)
17-18 points: excellent (5)

1.2.1.4. Self-evaluation sheet

Please make sure that you have completed all the tasks for the thematic unit. When evaluating your own performance, please place an X in the most appropriate box. If any of the tasks listed have not been completed or were impossible to complete, put an X in the "No" column.

		No	Yes
1.	The student is familiar with the terms / concepts of asepsis and antisepsis.		
2.	The student is familiar with the tools of asepsis.		
3.	The student is familiar with the methods of asepsis.		
4.	The student is familiar with the related complications.		

1.2.1.5. Theoretical test exam (single choice, multiple choice and true/false type questions) ***sample*:**

True and false statements (true: +, false: -) (1 point)
Surgical scrubbing eliminates transient bacteria in the upper layers of the skin, but residual bacteria in the deeper layers are only partially inactivated and their migration to the surface is only temporarily blocked. (***true***)

What is the definition of antisepsis? (Mark the correct answer) (1 point)

a. Interventions and means of behavior aiming to prevent entering microorganisms the operative field and the surgical wounds.
b. **Antisepsis relates to the removal of transient microorganisms from the skin and a reduction in the resident flora. Techniques may be applied to eliminate contamination (bacterial, viral, fungal and others) present on objects and skin by means of sterilization and disinfection.**

1.2. Thematic units

1.2.2. Thematic unit 2 – Lecture 2: Minor surgical procedures.

1.2.2.1. Study tasks

Content: **Main topic: Minor surgical procedures** List of subtopics: Incisions, excisions, biopsies, local anaesthesia. Minor surgical procedures: Principles of ambulatory surgery, sterility, surgical instrumentation, surgical tasks, administration. Possibilities of incisions and excisions. Surgical indications. Biopsy techniques, indications. Preoperative preparations on patients. Basics of local anaesthesia (anaesthetics, types of anaesthesia, complications).
Learning outcome of thematic unit: The student properly handles surgical instruments and performs interventions of minor surgical procedures (eclipse excision and cyst removal) in compliance with the regulations (good clinical practice) of surgery.
Background/Resources: Study materials (handouts, textbooks or other resources): *Compulsory:* - Practical Skills Syllabus (pp 9, 41-42) - Studying lecture “Minor surgical procedures” uploaded to CooSpace *Recommended:* - Studying the following tutorial videos uploaded to CooSpace (wmv): Techniques of surgical (hand- and instrument-tied) knotting Advanced surgical knotting techniques Basic surgical suturing methods Minor skin procedures

Contact hours			Individual learning process		
Week 2 **90 min**	Active participation in the lecture / online lecture	Active participation, questions for lecturer, discussion of possible problems	**2 x 60 min**	**Study activity:** - Studying relevant parts of textbook (Practical Skills Syllabus pp 9, 41-42) - Studying lecture “Minor surgical procedures” uploaded to CooSpace	**Special instructions:** - Studying the following tutorial videos uploaded to CooSpace (wmv): Techniques of surgical (hand- and instrument-tied) knotting Advanced surgical knotting techniques Basic surgical suturing methods Minor skin procedures - Answering self-assessment questions (see later)
Week 9			**60 min**		Recap: reviewing self-assessment questions related to Lecture 2 (see later)
Week 14			**30 min**		Recap: reviewing self-assessment questions related to Lecture 2 (see later)

1.2.2.2. Self-assessment questions

1. What type of surgery is considered as a minor surgical procedure?
2. What is the localisation of lesions that can be removed during surgical procedures?
3. Which are the most common types of local anaesthesia?
4. What compounds are used most commonly as local anaesthetics?
5. What is the eclipse excision? In what cases is it used? How is it performed?
6. What are the indications of excisions or incisions?
7. How lipomas are removed?
8. What is the difference in the method when removing atheromas and lipomas?
9. What types of suturing methods are used when closing wounds during minor surgical procedures?

1.2.2.3. Self-evaluation based on self-assessment questions

Maximum number of points: 9. Successful completion requires completion of at least 60% (5 points).
0–5 points: fail (1)
6 points: pass (2)
7 points: average (3)
8 points: good (4)
9 points: excellent (5)

1.2.2.4. Self-evaluation sheet

Please make sure that you have completed all the tasks for the thematic unit. When evaluating your own performance, please place an X in the most appropriate box. If any of the tasks listed have not been completed or were impossible to complete, put an X in the "No" column

		No	Yes
1.	The student is familiar with the main types of minor surgical interventions.		
2.	The student is familiar with the materials and instruments (e.g. local anaesthetics, scalpel, threads, etc.) used in minor surgical procedures.		
3.	The student is familiar with the methods of tissue separation and stitching.		
4.	The student is aware of the related complications and the consequences of any misconduct of surgical asepsis.		

1.2.1.5. Theoretical test exam (single choice, multiple choice and true/false type questions) *sample*:

True and false statements (true: +, false: -) (1 point)
Palpable nodes with different histological types under the skin (*sebaceus cysts or atheromas, lipoma, lymph nodes, ganglions, cysts*) can be excised. (***true***)

Which one of the following statements is not true regarding minor surgical procedures? (Mark one answer) (1 point)

a. Encapsulated lipomas are dissected bluntly from the subcutaneous tissues and then removed. They can also be removed by squeezing.
b. **In case of ellipse excision, the width of the excision is determined by the diameter of the lesion plus a minimum margin of 5 mm all round. The recommended length : width proportions are 5 : 1.**
c. In order to achieve local anesthesia, first the skin area is infiltrated with anesthetics, then the deep layers around the lesion.

1.2. Thematic units

1.2.3. Thematic unit 3 – Lecture 3: Conicotomy, tracheostomy.

1.2.3.1. Study tasks

Content: **Main topic: Conicotomy, tracheostomy** List of subtopics: Principles, indications of tracheostomy and conicotomy, risks and responsibility.
Learning outcome of thematic unit: Owing to a self-reflective attitude, the student improves any misconduct during implementation of surgical bleeding, tracheostomy and laparotomy.
Background/Resources: Study materials (handouts, textbooks or other resources): *Compulsory:* - Surgical Techniques textbook (pp 113) - Practical Skills Syllabus (pp 44-45) - Studying lecture “Conicotomy, tracheostomy” uploaded to CooSpace *Recommended:* - Studying the following tutorial videos uploaded to CooSpace (wmv): Tracheostomy *in vivo*

Contact hours			Individual learning process		
Week 3 **90 min**	Active participation in the lecture / online lecture	Active participation, questions for lecturer, discussion of possible problems	**2 x 60 min**	**Study activity:** - Studying relevant parts of textbook (Surgical Techniques pp 113; Practical Skills Syllabus pp 44-45) - Studying lecture "Conicotomy, tracheostomy" uploaded to CooSpace	**Special instructions:** - Studying the following tutorial videos uploaded to CooSpace (wmv): Tracheostomy *in vivo* - Answering self-assessment questions (see later)
Week 9			**60 min**		Recap: reviewing self-assessment questions related to Lecture 3 (see later)
Week 14			**30 min**		Recap: reviewing self-assessment questions related to Lecture 3 (see later)

1.2.3.2. Self-assessment questions

1. What are the indications of tracheostomy or conicotomy?
2. What are the main conditions causing mechanical respiratory failure?
3. What are the main conditions causing functional respiratory failure?
4. What are the advantages of tracheostomy and conicotomy?
5. What is the difference between conicotomy and tracheostomy?
6. What are the main steps of a tracheostomy?
7. What is upper and lower tracheostomy?
8. How is tracheostomy closed?
9. What are the possible complications of tracheostomy?

1.2.3.3. Self-evaluation based on self-assessment questions

Maximum number of points: 9. Successful completion requires completion of at least 60% (5 points).
0–5 points: fail (1)
6 points: pass (2)
7 points: average (3)
8 points: good (4)
9 points: excellent (5)

1.2.3.4. Self-evaluation sheet

Please make sure that you have completed all the tasks for the thematic unit. When evaluating your own performance, please place an X in the most appropriate box. If any of the tasks listed have not been completed or were impossible to complete, put an X in the "No" column.

		No	Yes
1.	The student understands the structure of the operating room (and service rooms), as well as the tasks of the staff in the OR.		
2.	The student knows the indications of tracheostomy and conicotomy.		
3.	The student is familiar with the methods of tracheostomy or conicotomy, and is aware of its complications..		

1.2.3.5. Theoretical test exam (single choice, multiple choice and true/false type questions) ***sample*:**

True and false statements (true: +, false: -) (1 point)
Following a skin incision, the ligamentum conicum (lig. crycothyroidum) just underlying the skin is cut transversally between the thyroid and cricoid cartilages and endotracheal intubation is performed. (***true***)

Tracheostomy is performed: (Mark the incorrect answer) (1 pont)
a. if the airway cannot be held open in any other manner.
b. if the endotracheal intubation must be terminated after 48 hours, but the airway must be maintained in an open state
c. if the conicotomy must be terminated after 48 hours but the airway must be maintained in an open state

1.2. Thematic units

1.2.4. Thematic unit 4 – Lecture 4: Basics of abdominal surgery, incisions, laparotomy

1.2.4.1. Study tasks

Content: **Main topic:** Basics of abdominal surgery, incisions, laparotomy List of subtopics: Principles, and indications of laparotomy, risks and complications. Closure of laparotomy. Basics and indications of appendectomy.
Learning outcome of thematic unit: The student handles surgical bleeding, and performs tracheostomy and laparotomy and abdominal wound closure under simulated operating conditions in compliance with the regulations (good clinical practice) of surgery, in the right order and with proper timing
Background/Resources: Study materials (handouts, textbooks or other resources): *Compulsory:* - Surgical Techniques textbook (pp 91-97) - Practical Skills Syllabus (pp 43) - Studying lecture “Basics of abdominal surgery, incisions, laparotomy” uploaded to CooSpace *Recommended:* - Studying the following tutorial videos uploaded to CooSpace (wmv): Laparotomy and closure of the abdominal wound in multiple layers *in vivo*

Contact hours			Individual learning process		
Week 4 **90 min**	Active participation in the lecture / online lecture	Active participation, questions for lecturer, discussion of possible problems	**2 x 60 min**	**Study activity:** - Studying relevant parts of textbook (Surgical Techniques pp 91-97; Practical Skills Syllabus pp 43) - Studying lecture "Basics of abdominal surgery, incisions, laparotomy" uploaded to CooSpace	**Special instructions:** - Studying the following tutorial videos uploaded to CooSpace (wmv): Laparotomy and closure of the abdominal wound in multiple layers *in vivo* - Answering self-assessment questions (see later)
Week 10			**60 min**		Recap: reviewing self-assessment questions related to Lecture 4 (see later)
Week 14			**30 min**		Recap: reviewing self-assessment questions related to Lecture 4 (see later)

1.2.4.2. Self-assessment questions

1. What is the definition of laparotomy?
2. What are the advantages of a median laparotomy?
3. What are the main types of laparotomy, their advantages and disadvantages?
4. What is a staging laparotomy?
5. What are the indications of a McBurney incision?
6. How the different abdominal layers are closed?
7. What are the possible complications of improper closure of the linea alba?
8. What is a purse-string suture and how is it performed?
9. What are the possible complications of laparotomy?

1.2.4.3. Self-evaluation based on self-assessment questions

Maximum number of points: 9 Successful completion requires completion of at least 60% (5 points).

0–5 points: fail (1)
6 points: pass (2)
7 points: average (3)
8 points: good (4)
9 points: excellent (5)

1.2.4.4. Self-evaluation sheet

Please make sure that you have completed all the tasks for the thematic unit. When evaluating your own performance, please place an X in the most appropriate box. If any of the tasks listed have not been completed or were impossible to complete, put an X in the "No" column.

		No	Yes
1.	The student knows the indications and the main types of laparotomy.		
2.	The student is familiar with the methods of median laparotomy.		
3.	The student knows the types of threads and suture types used at the closure of the different layers of abdominal wall.		
4.	The student knows the possible complications of median laparotomy.		

1.2.4.5. Theoretical test exam (single choice, multiple choice and true/false type questions) ***sample*:**

True and false statements (true: +, false: -) (1 point)
Peritoneum and linea alba are closed with seromuscular stitches. (***false***)

1. What are the principles of laparotomy? (Mark the **correct** answer) (1 point)
   a. Always the required length of surgical exposure should be applied
   b. Surgical excisions should be enlarged later in case it is necessary
   c. Muscles are not cut through, but we separate them along the fibers
   d. Nerve injury should be prevented
   e. a-c true
   f. a-d true

1.2. Thematic units

1.2.5. Thematic unit 5 – Lecture 5: Advanced surgical techniques: enterotomy, bowel- and vessel anastomoses.

1.2.5.1. Study tasks

Content: **Main topic:** Advanced surgical techniques: enterotomy, bowel- and vessel anastomoses. List of subtopics: Advanced surgical suturing techniques. Definition, characteristics, indications methods and possible complications of enterotomy. Indications and methods vessel anastomoses.
Learning outcome of thematic unit: The student properly handles instruments and performs procedures of bowel and vessel anastomoses in compliance with the regulations (good clinical practice) of surgery.
Background/Resources: Study materials (handouts, textbooks or other resources): *Compulsory:* - Surgical Techniques textbook (pp 101-103) - Practical Skills Syllabus (pp 42) - Studying lecture “Advanced surgical techniques: enterotomy, bowel- and vessel anastomoses” uploaded to CooSpace *Recommended:* - Studying the following tutorial videos uploaded to CooSpace (wmv): Anastomosis techniques (vessel- and bowel anastomoses)

Contact hours			Individual learning process		
Week 5 **90 min**	Active participation in the lecture / online lecture	Active participation, questions for lecturer, discussion of possible problems	**2 x 60 min**	**Study activity:** - Studying relevant parts of textbook (Surgical Techniques pp 101-103; Practical Skills Syllabus pp 42) - Studying lecture "Advanced surgical techniques: enterotomy, bowel- and vessel anastomoses" uploaded to CooSpace	**Special instructions:** - Studying the following tutorial videos uploaded to CooSpace (wmv): Anastomosis techniques (vessel- and bowel anastomoses) - Answering self-assessment questions (see later)
Week 10			**60 min**		Recap: reviewing self-assessment questions related to Lecture 5 (see later)
Week 15			**30 min**		Recap: reviewing self-assessment questions related to Lecture 5 (see later)

1.2.5.2. Self-assessment questions

1. How is enterotomy performed?
2. How the asepsis can be achieved when opening the intestinal lumen? What types of disinfectants are used?
3. What are the phases of anastomoses healing?
4. What is vascular skeletisation?
5. What is the difference between stitching the bowel anastomosis with conventional surgical instrument and by using a stapler?
6. What are the types of bowel anastomoses?
7. How many layers are involved during bowel anastomosis?
8. What are the main types of complications of bowel anastomosis?
9. What are the indications of vessel anastomoses?
10. What are the main types of vessel anastomoses?
11. What types of suture materials are used during vessel anastomosis?
12. What types of suturing methods are used during vessel anastomosis?

1.2.5.3. Self-evaluation based on self-assessment questions

Maximum number of points: 12 Successful completion requires completion of at least 60% (7 points).

0–7 points: fail (1)
8 points: pass (2)
9-10 points: average (3)
11 points: good (4)
12 points: excellent (5)

1.2.5.4. Self-evaluation sheet

Please make sure that you have completed all the tasks for the thematic unit. When evaluating your own performance, please place an X in the most appropriate box. If any of the tasks listed have not been completed or were impossible to complete, put an X in the "No" column.

		No	Yes
1.	The student is familiar with the principles, materials, methods and instruments of enterotomy and bowel anastomoses.		
2.	The student is familiar with the principles, materials, methods and instruments of vessel anastomosis.		

1.2.5.5. Theoretical test exam (single choice, multiple choice and true/false type questions) ***sample*:**

True and false statements (true: +, false: -) (1 point)
We use end-to-end, end-to-side and side-to-side is cases of both vessel and bowel anastomoses. (***false***)

Which are the features of the maturation phase of an anastomosis healing? (Mark the **correct** answer) (1 point)

a. Early phase, inflammatory response, but there is no intrinsic cohesion.
b. The period of collagen remodeling, when the stability and strength of the anastomosis increases
c. Fibroblast proliferation occurs with collagen formation.

1.2. Thematic units

1.2.6. Thematic unit 2 – Lecture 2: Advanced laparoscopic procedures.

1.2.6.1. Study tasks

Content: **Main topic:** Advanced laparoscopic procedures List of subtopics: Types of laparoscopic surgery. Consequences of pneumoperitoneum (pathophysiological aspects, complications). LC appendectomy, cholecystectomy.
Learning outcome of thematic unit: The student properly handles basic instruments of minimally invasive surgery. The student shows proper eye-hand coordination skills and properly carries out basic laparoscopic manoeuvres under simulated conditions. The student is able to perform complex procedures (stitching, knotting) under simulated conditions in compliance with the regulations (good clinical practice) of surgery, with optimal timing.
Background/Resources: Study materials (handouts, textbooks or other resources): *Compulsory:* - Surgical Techniques textbook (pp 114-120) - Studying lecture “Advanced laparoscopic procedures” uploaded to CooSpace *Recommended:* - Studying the following tutorial videos uploaded to CooSpace (wmv): Basic laparoscopic coordination exercises Basic laparoscopic suturing and knotting techniques

Contact hours			Individual learning process		
Week 6 **90 min**	Active participation in the lecture / online lecture	Active participation, questions for lecturer, discussion of possible problems	**2 x 60 min**	**Study activity:** - Studying relevant parts of textbook (Surgical Techniques, pp 114-120) - Studying lecture “Advanced laparoscopic procedures” uploaded to CooSpace	**Special instructions:** - Studying the following tutorial videos uploaded to CooSpace (wmv): Basic laparoscopic coordination exercises Basic laparoscopic suturing and knotting techniques - Answering self-assessment questions (see later)
Week 12			**60 min**		Recap: reviewing self-assessment questions related to Lecture 6 (see later)
Week 15			**30 min**		Recap: reviewing self-assessment questions related to Lecture 6 (see later)

1.2.6.2. Self-assessment questions

1. What are the parts of the laparoscopic tower?
2. What are the indications and contraindications of laparoscopic surgery?
3. What are the main types of advanced laparoscopic surgery?
4. What are the main types of possible pathophysiological consequences of pneumoperitoneum?
5. What are the advantages and disadvantages of minimally invasive surgery?
6. What are the most common complications of minimally invasive surgery?
7. How is the laparoscopic appendectomy performed?
8. How is the laparoscopic cholecystectomy performed?
9. What instruments are used in minimally invasive surgery?

1.2.6.3. Self-evaluation based on self-assessment questions

Maximum number of points: 9 Successful completion requires completion of at least 60% (5 points).

0–5 points: fail (1)
6 points: pass (2)
7 points: average (3)
8 points: good (4)
9 points: excellent (5)

1.2.6.4. Self-evaluation sheet

Please make sure that you have completed all the tasks for the thematic unit. When evaluating your own performance, please place an X in the most appropriate box. If any of the tasks listed have not been completed or were impossible to complete, put an X in the "No" column.

		No	Yes
1.	The student is familiar with the aims, advantages and disadvantages of minimally invasive surgery.		
2.	The student knows the types of operations which can be performed with minimally invasive surgery.		
3.	The student is familiar with the instruments of minimally invasive surgery.		
4.	The student knows the pathophysiological consequences and complications of minimally invasive surgery.		

1.2.6.5. Theoretical test exam (single choice, multiple choice and true/false type questions) ***sample*:**

True and false statements (true: +, false: -) (1 point)
Main causes of air embolism in pneumoperitoneum may be the direct puncture of a vessel, or vascular injury of parenchymal organs (e.g. liver).(***true***)

Pathophysiological consequences of pneumoperitoneum applied at laparoscopy can be the following: (Mark the **correct** answer) (1 point)

a. The increase of the intraabdominal pressure can decrease the venous backflow to the heart.
b. The splanchnic microcirculation can be decreased.
c. The intrathoracal pressure can also be increased, and this can decrease the exchange of respiratory gases.
d. The kidney perfusion and the excretion of urine can be diminished.
e. **All of the above**
f. None of the above

1.2. Thematic units

1.2.7. Thematic unit 7 – Lecture 7: Basics of thoracic and cardiac surgery

1.2.7.1. Study tasks

Content: **Main topic:** Basics of thoracic and cardiac surgery List of subtopics: Historical background. Technical principles. Instruments. Pathophysiological aspects, complications.
Learning outcome of thematic unit: The student knows the principles, indications, instruments, methods and complications of thoracic and cardiac surgery.
Background/Resources: Study materials (handouts, textbooks or other resources): *Compulsory:* - Studying lecture “Basics of thoracic and cardiac surgery” uploaded to CooSpace

Contact hours			Individual learning process		
Week 7 **90 min**	Active participation in the lecture / online lecture	Active participation, questions for lecturer, discussion of possible problems	**2 x 60 min**	**Study activity:** - Studying lecture "Basics of thoracic and cardiac surgery" uploaded to CooSpace	**Special instructions:** - Answering self-assessment questions (see later)
Week 13			**60 min**		Recap: reviewing self-assessment questions related to Lecture 7 (see later)
Week 15			**30 min**		Recap: reviewing self-assessment questions related to Lecture 7 (see later)

1.2.7.2. Self-assessment questions

1. How the ventilation of patients during thoracic and cardiac surgery is performed?
2. How the positioning of patients is used during thoracic and cardiac surgery?
3. What is the mechanism of action of a heart-lung machine?
4. What are main surgical sites (chest penetration sites) in cardiac surgery?
5. What is flail chest and what are its symptoms?
6. What are the main causes of intrathoracic fluid accumulation?
7. How chest drainage is performed?
8. What are the possible complications of chest drainage?
9. What is pericardiocentesis?

1.2.7.3. Self-evaluation based on self-assessment questions

Maximum number of points: 9 Successful completion requires completion of at least 60% (5 points).

0–5 points: fail (1)
6 points: pass (2)
7 points: average (3)
8 points: good (4)
9 points: excellent (5)

1.2.7.4. Self-evaluation sheet

Please make sure that you have completed all the tasks for the thematic unit. When evaluating your own performance, please place an X in the most appropriate box. If any of the tasks listed have not been completed or were impossible to complete, put an X in the "No" column.

		No	Yes
1.	The student knows the indications, and instruments of thoracic and cardiac surgery.		
2.	The student knows the principles of chest drainage.		
3.	The student is familiar with the principles of mechanic ventilation used during cardiac surgery.		

1.2.7.5. Theoretical test exam (single choice, multiple choice and true/false type questions) ***sample*:**

True and false statements (true: +, false: -) (1 point)
Thoracic surgery is significantly different from abdominal surgery because special preparations (including anaesthesiology) may be require and the special instruments are used during thoracic surgery. (***true***)

Pleural fluid may be resulting from: (Mark the correct answer) (1 point)

a. transudate: containing >3,0 g/ml of proteins.
b. transudate: serous fluid which also can be caused by tumours.
c. Empyema: pus in the thoracic region containing <3,0 g/ml of proteins.