

STUDY GUIDE

Preparation for the
THEORETICAL EXAM in
„BASIC SURGICAL SKILLS”

Institute of Surgical Research, University of Szeged

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This teaching material was produced at the University of Szeged and funded by the European Union. Project No: EFOP-3.4.3-16-2016-00014



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Introduction

Summary of aims and learning outcomes

The aim of the subject (Basic Surgical Skills lectures and practices combined): to provide the general level of theoretical surgical knowledge and practical skills necessary for the implementation of invasive techniques that are essential for a general physician.

Acquired competency: By applying principles of asepsis, the student is autonomously able to perform bedside (hospital) hand disinfection, surgical attire, gowning, gloving, surgical knotting and basic surgical stitches as well as wound management under simulated sterile operating conditions. The student is also able to carry out these procedures autonomously under sterile clinical conditions (i.e. in the operating theatre) under supervision.

Courses: No 1 lecture (AOK-KUA111, 3 credits, 7 x 2 hrs); No 2 practice (AOK-KUA112, 0 credit) including workshops (5 x 60 min) + practices (9 x 120 min) (based on individual group schedule)

Schedule and topics: lectures

Week	Programme	Monday	Lectures (thematic units / topics)
		10.00-11.30	
1	L+W	Lecture 1	Asepsis and antisepsis
2	L+W	Lecture 2	Basic surgical instruments
3	L+P	Lecture 3	The operation
4	L+P	Lecture 4	Wounds
5	L+P	Lecture 5	Bleeding
6	L+W	Lecture 6	Complications
7	L+W	Lecture 7	Minimally invasive surgery
8	P		
9	P		
10	P		
11		Break	
12	P		
13	W		
14	P exam		
15	P exam		

L: lectures (Albert Gellért Education Center, Kossuth Lajos avenue 35.)

W: Workshop (Dept. of Anatomy, lecture hall)

P: 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 10.00-11.30)
Place: Albert Gellért Education Center, Kossuth Lajos avenue. 35. Szeged,

Topics of the lectures:

1. Asepsis and antisepsis
2. Basic surgical instruments
3. The operation
4. Wounds
5. Bleeding
6. Complication.
7. Minimally invasive 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

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

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

Advanced surgical knotting techniques

Wound management and bandaging

1.1. Course description

Milestone:	Milestone code:
Subject: Basic Surgical Skills	Subject code: AOK-KUA110
Course: Basic Surgical Skills lecture	Course code: AOK-KUA111
Course credit:	3
Form of course completion:	end semester examination mark (5 grade)
Type of course:	lecture
Characteristics of course:	traditional classroom lectures or online lectures
Recommended term of completion:	spring term
Frequency of announcement of course:	once a year
No of course hours: - contact: - individual:	- contact: 7x2 hours - individual: 36 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 Ércses (Assistant Professor) ercses.daniel@med.u-szeged.hu

1.1.1. Aim of the course

To achieve the general level of theoretical surgical knowledge and practical skills necessary for the implementation of invasive techniques that are essential for a general physician.

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)
<p>The student is familiar with principles, instruments, equipment and methods related to surgical asepsis and its proper implementation. The student is aware of the related complications and the consequences of any misconduct.</p>	<p>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.</p>	<p>The student is ready to adhere strictly to the principles of asepsis and conducts all aseptic procedures conscientiously. 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.</p>	<p>The student performs all surgical asepsis procedures autonomously and accurately: surgical scrubbing, gowning and gloving under simulated operating conditions. The student performs these procedures under supervision and under clinical conditions autonomously. The student follows sterility regulations (good clinical practice requirements for asepsis) strictly during all procedures.</p>
	<p>The student recognizes the need for hand disinfection autonomously and performs it in compliance with current medical regulations (good clinical practice requirements). The student performs the procedure adequately with optimal timing in the hospital (during patient examination and medical intervention, e.g. injection).</p>		<p>The student performs hand disinfection at the hospital autonomously and routinely. The student follows sterility regulations (good clinical practice requirements for asepsis) strictly during all procedures.</p>
	<p>The student actively</p>		<p>The student actively</p>

	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.		participates in cleansing and isolation of the surgical area under simulated conditions (as a member of the surgical team) under simulated operating conditions. The student performs these procedures under supervision in clinical settings. The student follows sterility regulations (good clinical practice requirements for asepsis) strictly during all procedures.
The student is familiar with principles, materials, disinfectants and methods related to wound management. The student recognizes different types of bleedings (arterial, venous and capillary). The student knows methods, instruments and materials used to handle surgical bleeding.	The student performs wound management, handles surgical bleeding under simulated conditions and performs them in compliance with surgical regulations (good clinical practice), in the right order and with proper timing under simulated conditions.	The student is ready to adhere strictly to the principles of asepsis and conducts tasks conscientiously. The student is ready to perform all wound and surgical bleeding management procedures precisely and in a self-disciplined manner.	The student performs wound management and handles surgical bleeding autonomously under simulated operating conditions and participates in these tasks under supervision (if requested by a supervisor) under clinical circumstances.
The student knows: - the structure of the operating room, - the tasks of the operating team, - the most important surgical materials and instruments, and - procedures (including wound closure) used during surgical interventions. The student is aware of the related	The student handles surgical instruments used for surgical interventions, performs tissue separation, stitching and suturing, and performs surgical suturing in compliance with surgical regulations (good clinical practice), in the right order and with proper timing under simulated	The student is ready to adhere strictly to the principles of asepsis and conducts all procedures conscientiously. The student is ready to perform all procedures precisely and in a self-disciplined manner.	The student performs basic wound-closing methods autonomously under simulated operating conditions and participates in wound closing procedures under supervision (if requested by a supervisor) under

complications. The student knows the different types of operations, their indications and methods of patient preparation for surgery.	conditions.	Owing to a self-reflective attitude, the student improves any misconduct during implementation.	clinical circumstances.
The student is familiar with the types, features and applicability of different surgical knots. The students knows surgical knotting principles, materials and methods: the hand-tied two-handed and instrument-tied knotting techniques.	The student properly performs surgical knotting (under tension) in compliance with surgical regulations (good clinical practice), in the right order and with proper timing under simulated conditions.	The student is ready to adhere strictly to the rules of surgical knotting and conscientiously conducts knotting procedures. 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 basic surgical knotting autonomously under simulated operating conditions and also in clinical situations (if requested by a supervisor).
The student is familiar with principles, instruments, technical foundation and methods related to minimally invasive interventions. The student knows the types of minimally invasive surgery, advantages, indications and complications.	The student handles basic instruments for minimally invasive surgery in compliance with the rules (good clinical practice) of surgery under simulated conditions.	The student is familiar with principles, instruments, technical foundation and methods related to minimally invasive interventions. The student knows the types of minimally invasive surgery, advantages, indications and complications.	The student handles basic instruments for minimally invasive surgery in compliance with the rules (good clinical practice) of surgery under simulated conditions.

1.1.3. Prerequisites for course registration:

Prerequisite: completion of the first 3 semesters

Requirements for acknowledgement of lectures: completing minimum of 75% of Coospace tasks.

Criteria for completing the course: completion of a successful practical exam of all three practical exam tasks by the end of the semester (see linking practice).

1.1.4. Course content (main topics) – thematic units

Asepsis and antisepsis

Basic surgical instruments

The operation

Wounds

Bleeding

Complications

Minimally invasive surgery

1.1.5. Course schedule

Contact hours			Individual learning process	
Week	Hours	Content	Hours	Content
1.	2	Lecture 1. Asepsis and antisepsis	3	Individual preparation for practices held in weeks 3–5 Sources: - Surgical Techniques textbook (pp 9-21) - Answering self-assessment questions (see later) - Studying lecture “Asepsis and antisepsis” 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.	2	Lecture 2. Basic surgical instruments.	3	Individual preparation for practices held in weeks 3–5 Sources: - Surgical Techniques textbook (pp 25-44) - Answering self-assessment questions (see later) - Studying “Basic surgical instruments” lecture 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 (incision, basic tissue preparation, stitching, suturing, removal of sutures)



3.	2	Lecture 3. The operation.	3	Recap: For preparation for practices held in weeks 3–5, studying of the above tutorial videos. Preparation for the test exam: Sources: - Surgical Techniques textbook (pp 22-24, 45-50) - Answering self-assessment questions (see later) - Studying lecture “The operation” uploaded to Coospace - Studying the following tutorial videos uploaded to Coospace (wmv): Laparotomy and closure of the abdominal wound in 3 layers in vivo
4.	2	Lecture 4. Wounds.	3	Individual preparation for practices held in weeks 8–11 Sources: - Surgical Techniques textbook (pp 76-88) - Answering self-assessment questions (see later) - Studying lecture “Wounds” uploaded to Coospace - Studying the following tutorial videos uploaded to Coospace (wmv): Wound management and bandaging
5.	2	Lecture: 5. Bleeding.	3	Preparation for the test exam Sources: - Surgical Techniques textbook (pp 63-69) - Answering self-assessment questions (see later) - Studying lecture “Bleeding” uploaded to Coospace





6.	2	Lecture 6. Complications.	3	Preparation for the test exam Sources: - Surgical Techniques textbook (pp 47-49, 70-75, 79-81) - Answering self-assessment questions (see later) - Studying lecture “Complications” uploaded to Coospace
7.	2	Lecture 7. Minimally invasive surgery.	3	Individual preparation for practices held in weeks 8–11 Preparation for the test exam Sources: - Surgical Techniques textbook (pp 114-120) - Answering self-assessment questions (see later) - Studying lecture “Minimally invasive surgery” uploaded to Coospace - Studying the following tutorial videos uploaded to Coospace (wmv): Basic laparoscopic coordination exercises Basic laparoscopic suturing and knotting techniques
8.			2	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.		Spring break	-	
12.			2	Recap: reviewing self-assessment questions related to Lecture 6 (see later)
13.			2	Recap: reviewing self-assessment questions related to Lecture 7 (see later)
14.			2,5	Recap: reviewing self-assessment questions related to Lectures 1-4 (see later)
15.			2,5	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
- Completion of Coospace tasks
- Personal and online consultation with lecturers

1.1.8. Mid-year study requirements

Attendance on lectures is recommended.

1.1.9. Monitoring and evaluation of acquired knowledge and competencies

Continuous:

The prerequisite for the theoretical examination is the completion of a successful practical exam, which can be achieved by successful completion of all three practical exam tasks until the end of the semester (see linking practice).

Final:

Evaluation of acquired skills: Grading: The five-grade end-of-semester examination mark is based on the average for the mark on the end-of-semester written theoretical exam and the mark on the practical exam.

Grading:

Excellent (5): $\geq 90\%$ (average of theoretical test exam and practical exam results)

Good (4): 89–80% (average of theoretical test exam and practical exam results)

Average (3): 79–70% (average of theoretical test exam and practical exam results)

Pass (2): 69–60% (average of theoretical test exam and practical exam results)

Fail (1): $\leq 59\%$ (average of theoretical test exam and practical exam results)

1.1.10. Technical foundation required for teaching and learning the subject

Traditional classroom with a projector or stable 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: Asepsis and antisepsis.

1.2.1.1. Study tasks

Content:**Main topic: Asepsis and antisepsis**

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).

Background/Resources:

Study materials (handouts, textbooks or other resources):

Compulsory:

- Surgical Techniques textbook (pp 9-21)
- Studying lecture “Asepsis and antisepsis” 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	3 hours	Study activity: - Studying relevant parts of textbook (Surgical Techniques, pp 9-21) - Studying lecture “Asepsis and antisepsis” 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			2 hours		Recap: reviewing self-assessment questions related to Lecture 1 (see later)
Week 14			1 hour		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)

- Interventions and means of behavior aiming to prevent entering microorganisms the operative field and the surgical wounds.
- 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: Basic surgical instruments.

1.2.2.1. Study tasks

Content:**Main topic: Basic surgical instruments**

List of subtopics: Special surgical tools and technologies, suture materials. Wound closure (sutures, clips, adhesive strips). Suturing techniques. Failures of suturing techniques. Removal of sutures. Drainage.

Learning outcome of thematic unit:

The student handles surgical instruments used for surgical performs tissue separation, stitching, and suturing and performs surgical suturing and knotting in compliance with 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 25-44)
- Studying lecture “Basic surgical instruments” 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 (incision, basic tissue preparation, stitching, suturing, removal of sutures)



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	3 hours	Study activity: - Studying relevant parts of textbook (Surgical Techniques, pp 25-44) - Studying lecture “Basic surgical instruments” 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 (incision, basic tissue preparation, stitching, suturing, removal of sutures) - Answering self-assessment questions (see later)
Week 9			1 hour		Recap: reviewing self-assessment questions related to Lecture 2 (see later)
Week 14			1 hour		Recap: reviewing self-assessment questions related to Lecture 2 (see later)



1.2.2.2. Self-assessment questions

1. How can the basic surgical instruments be classified based on their function?
2. What is the proper way to hold/use scalpel and scissors in surgery?
3. What is the difference between tissue and dressing forceps? At which tissue do we use them and what the proper method to hold them in surgery?
4. How can we classify surgical needles?
5. How can we classify surgical suture materials?
6. Examples for natural and synthetic non-absorbable suture materials...
7. Examples of absorbable suture materials...
8. How do you grasp/hold a needle with a needle holder in surgery?
9. What are the most important characteristics of Donati sutures?
10. What are the advantages and disadvantages of continuous sutures as compared to the simple interrupted sutures?
11. What are the indications of a purse-string suture?
12. What are possible methods for closure of an abdominal wound (including those of the different layers)?
13. How and when surgical sutures are removed? What are the factors influencing the time of suture removal?
14. What is the purpose and the method of drainage? What is the difference between active and passive drainage?

1.2.2.3 Self-evaluation based on self-assessment questions

Maximum number of points: 14. Successful completion requires completion of at least 60% (8 points).

0–8 points: fail (1)

9 points: pass (2)

10-11 points: average (3)

12-13 points: good (4)

14 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 types and characteristics of basic surgical instruments.		
2. The student is familiar with materials (textiles, suture materials) used in a surgery.		
3. The student is familiar with the main methods of tissue separation and suturing.		
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)

In case of a $\frac{1}{4}$ needle, the total length of the needle is 4 times longer than the distance between the tip and the eye of the needle. (*false*)

Surgical instruments can be used for the following purposes: (Mark the incorrect answer) (1 point)

- Hemostats are used to stop bleeding by grasping and clamping the ends of cut vessels or for preventive hemostasis by applying them before cutting the vessel.
- Wide-bladed scalpels with a curved cutting edge are used for the incision of skin and subcutaneous tissues.
- Dressing forceps are used to grip skin and subcutaneous tissues, while vessels are grasped with tissue forceps.**

1.2. Thematic units

1.2.3. Thematic unit 3 – Lecture 3: The operation.

1.2.3.1. Study tasks

Content:**Main topic: The operation**

List of subtopics: Basic surgical interventions. Indications for an operation, informed consent, operative risk, the surgeon's responsibility. Preoperative investigations. Complications of surgery. Preoperative preparation of the patient. Local anesthesia (drugs, types of local anesthesia, complications). Perioperative fluid balance, fluid requirements and fluid therapy. Complications.

Learning outcome of thematic unit:

The student properly handles surgical instruments used for surgical performs tissue separation, stitching, and suturing and performs surgical suturing in compliance with the regulations (good clinical practice) of surgery, 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 22-24, 45-50)
- Studying lecture "The operation" uploaded to Coospace

Recommended:

- Studying the following tutorial videos uploaded to Coospace (wmv):
Laparotomy and closure of the abdominal wound in 3 layers *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	3 hours	Study activity: - Studying relevant parts of textbook (Surgical Techniques, pp 22-24, 45-50) - Studying “lecture The operation” uploaded to Coospace	Special instructions: - Studying the following tutorial videos uploaded to Coospace (wmv): Laparotomy and closure of the abdominal wound in 3 layers <i>in vivo</i> - Answering self-assessment questions (see later)
Week 9			1 hour		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 is the definition of operation?
2. What are the main types of surgical interventions?
3. What is the difference between absolute and relative surgical indication?
4. What are the most common surgical complications?
5. Based on the risk, how the operations can be classified and what are their main characteristics?
6. Based on the timing of operations, what are the main types and what are their main characteristics?
7. What are the main types of preoperative examinations that should be performed before surgery?
8. What are the main elements of (patient) preparation before surgery?
9. What is the definition of local anesthetics? What is their main mode of action? What are the main types?
10. How can we determine the effectiveness of perioperative fluid therapy?
11. What are the indications of peripheral and central venous access?

1.2.3.3. Self-evaluation based on self-assessment questions

Maximum number of points: 11. Successful completion requires completion of at least 60% (6 points).

0-6 points: fail (1)

7 points: pass (2)

8 points: average (3)

9 points: good (4)

10-11 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) and the roles of the operating team.		
2. The student knows the different types of operations, their indications and methods of patient preparation for surgery.		
3. Familiar with the preoperative preparations of the patient before the OR and inside the OR.		

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)

Preoperative preparation is a series of procedures that make the patient suitable for the planned intervention and ensure the optimal conditions for the operation. (*true*)

Which of the followings belong to high-risk surgery? (Mark the incorrect answer) (1 point)

- Extended abdominal and thoracic operations
- Intracranial operations
- Appendectomy**
- When blood loss exceeds 1000 ml

1.2. Thematic units

1.2.4. Thematic unit 4 – Lecture 4: Wounds.

1.2.4.1. Study tasks

Content:**Main topic: Wounds**

List of subtopics: Types and classification of accidental wounds. Wound healing, scar formation. Surgical wounds. Wound closure and its complications. Management of accidental wounds. Dressings, types of bandages. Innovations in wound treatment

Learning outcome of thematic unit:

The student performs wound management, handles surgical bleeding under simulated conditions and performs them in compliance with the regulations (good clinical practice) of surgery, 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 76-88)
- Studying lecture “Wounds” uploaded to Coospace

Recommended:

- Studying the following tutorial videos uploaded to Coospace (wmv):
Wound management and bandaging

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	3 hours	Study activity: - Studying relevant parts of textbook (Surgical Techniques, pp 76-88) - Studying lecture “Wounds” uploaded to Coospace	Special instructions: - Studying the following tutorial videos uploaded to Coospace (wmv): Wound management and bandaging - Answering self-assessment questions (see later)
Week 10			1 hour		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 are the main causes of accidental wounds?
2. What are the criteria for classifying accidental wounds?
3. What occasional wounds are known based on penetration route?
4. How can wounds be classified according to bacterial contamination?
5. What are acute and chronic wounds?
6. What type of wounds can we distinguish by depth?
7. What is the definition of primary and delayed wound closure?
8. What is the definition of early or late delayed wound closure?
9. What are the main factors influencing wound healing?
10. In the case of surgical wounds, which procedures are strictly adhered to for optimal wound healing?
11. What are the early and late complications of wound healing?

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12. What are the phases of wound healing?
13. What is the purpose of temporary wound closure?
14. In what cases should primary wound closure always be performed?
15. In what cases is primary wound closure prohibited?
16. What are the main types of bandages and dressings?
17. What are the definitions adhesive and covering bandages and what are the methods of implementation?
18. What is the definitions of pressing and wedging bandages and what are the methods of implementation?
19. What is the definition of compressing bandages and what is the method of implementation?
20. What is the definition of retention bandages and what is the method of implementation?

1.2.4.3. Self-evaluation based on self-assessment questions

Maximum number of points: 20. Successful completion requires completion of at least 60% (12 points).

0–11 points: fail (1)

12-13 points: pass (2)

14-15 points: average (3)

16-17 points: good (4)

18-20 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 principles of wound management.		
2. The student knows the materials, disinfectants and methods used in wound management.		

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3.	The student recognizes the different types of bleeding (arterial, venous, capillary).		
4.	The student knows methods, instruments and materials used for handling of surgical bleeding.		

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)

In case primary wound closure is contraindicated, secondary wound closure is performed after an open wound management. In such cases, wounds can often be closed only some weeks after the injury. (*true*)

In the following case(s), primary wound closure must always be performed: (Mark one answer) (1 point)

- a. Penetrating chest injury
- b. Penetrating abdominal injury
- c. Penetrating dura mater injury
- d. **All of the above**
- e. None of the above



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1.2. Thematic units

1.2.5. Thematic unit 5 – Lecture 5: Bleeding.

1.2.5.1. Study tasks

Content:**Main topic: Bleeding**

List of subtopics: Types and classification of hemorrhage. Signs and consequences of blood loss. Bleeding in surgery (pre-, intra- and postoperative bleeding). Factors influencing operative blood loss. Surgical hemostasis (mechanical, thermal, chemical-biological methods). Blood replacement in surgery, autotransfusion.

Learning outcome of thematic unit:

The student performs wound management, handles surgical bleeding under simulated conditions and performs them in compliance with the regulations (good clinical practice) of surgery, 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 63-69)
- Studying lecture “Bleeding” uploaded to CooSpace



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	3 hours	Study activity: - Studying relevant parts of textbook (Surgical Techniques, pp 63-69) - Studying lecture “Bleeding” uploaded to Coospace	Special instructions: - Answering self-assessment questions (see later)
Week 10			1 hour		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. What are the main phases/factors of hemostasis?
2. How severity of hemorrhage is classified?
3. What are the main factors influencing severity of surgical bleeding?
4. Based on the direction, how bleeding is classified?
5. How can arterial and venous bleeding be distinguished?
6. How do we manage arterial and venous bleeding?
7. How do you manage oozing?
8. How do we handle bleeding occurring outside the hospital?
9. What is the anatomical border between upper and lower gastrointestinal bleeding?
10. What is hematemesis, hematochesia and melena?
11. What are the risk factors of intraoperative bleeding?
12. What are the steps of surgical hemostasis performed by a ligature?
13. What is preventive hemostasis and what are their approaches?
14. What is difference between the principles and methods of monopolar and bipolar diathermy?
15. What are the main causes of intraoperative diffuse bleeding?

1.2.5.3. Self-evaluation based on self-assessment questions

Maximum number of points: 15. Successful completion requires completion of at least 60% (9 points).

0–8 points: fail (1)

9 points: pass (2)

10-11 points: average (3)

12-13 points: good (4)

14-15 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 interventions used to prevent bleeding during surgery.		
2. The student knows the materials and methods used at haemostasis.		
3. The student knows conventional surgical methods of surgical hemostasis.		
4. The student knows electrosurgical methods of surgical hemostasis.		

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)

Handling of bleeding should be performed as follows: soaking up the blood with a sponge, then clamping the vessel with an artery forceps, then tying the first and the second half-hitch and finally removing the artery forceps. (*false*)

Which one is not a general symptom of bleeding? (Select one answer) (1 point)

- a. Cyanosis
- b. Tachycardia
- c. **Slowly rising core temperature**
- d. Hypotension
- e. Pale skin and mucous membranes



1.2. Thematic units

1.2.6. Thematic unit 6 – Lecture 6: Complications.

1.2.6.1. Study tasks

Content:

Main topic: Complications

List of subtopics: Definitions and classifications of complications. Infections. Wound infection: types, classification, risk factors, modalities of prevention. Complications of wound healing. Hemorrhagic complications related to surgery, diagnosis and therapy.

Learning outcome of thematic unit:

The student knows the types of possible complications of traditional surgical interventions and minimally invasive surgery as well as the principles of prevention.

Background/Resources:

Study materials (handouts, textbooks or other resources):

Compulsory:

- Surgical Techniques textbook (pp 47-49, 70-75, 79-81)
- Studying lecture “Complications” uploaded to Coospace





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	3 hours	Study activity: - Studying relevant parts of textbook (Surgical Techniques, pp 47-49, 70-75, 79-81) - Studying lecture “Complications” uploaded to CooSpace	Special instructions: - Answering self-assessment questions (see later)
Week 11			2 hours		Recap: reviewing self-assessment questions related to Lecture 6 (see later)
Week 15			1 hour		Recap: reviewing self-assessment questions related to Lecture 6 (see later)





1.2.6.2. Self-assessment questions

1. What are the main signs and symptoms of postoperative bleeding?
2. What are the signs and symptoms of postoperative bleeding?
3. How to treat postoperative bleeding?
4. What are the main types of shock?
5. What signs may indicate a shock?
6. What laboratory changes may indicate the development of shock?
7. What compensation mechanisms are activated in the event of shock?
8. What are the signs of progressive shock?
9. What are the main stages of haemorrhagic shock?
10. What are the signs of a wound infection (after surgery)?
11. What are the early and late complications of wound healing?
12. What are the characteristics of keloid and hypertrophic scar?

1.2.6.3. Self-evaluation based on self-assessment questions

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

0–6 points: fail (1)

7 points: pass (2)

8-9 points: average (3)

10-11 points: good (4)

12 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 knows the main causes, symptoms and signs of postoperative bleeding.		
2. The student knows the main types of shock and the laboratory changes that may indicate the development of shock.		
3. The student knows the main types, symptoms and phases of haemorrhagic shock.		
4. The student knows the main types of wound healing complications.		

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)

Fever developing in less than 24 hours after surgery is caused by urinary tract infection, wound inflammation, the insufficiency of intestinal anastomosis, or an abscess in the abdominal cavity. (*false*)

Which one of the followings is the characteristic of a hypertrophic scar? (Mark the correct answer) (1 point)

- a. It is common on body parts covered with thick chorium
- b. It is made of non-hyaline collagen fibers and a rich mass of fibrocytes
- c. **The thickening of the scar line exceeds the line of injury**

1.2. Thematic units

1.2.7. Thematic unit 7 – Lecture 7: 7. Minimally invasive surgery

1.2.7.1. Study tasks

Content:**Main topic: Minimally invasive surgery**

List of subtopics: Historical background. Components of the laparoscopic tower, laparoscopic instruments. Basic procedures, pathophysiological background. Complications.

Learning outcome of thematic unit:

The student properly handles basic instruments of minimally invasive surgery in compliance with the rules (good clinical practice) of surgery under simulated conditions.

The student shows proper eye-hand coordination skills and properly carries out basic laparoscopic maneuvers under simulated conditions..

Background/Resources:

Study materials (handouts, textbooks or other resources):

Compulsory:

- Surgical Techniques textbook (pp 114-120)
- Studying lecture “Minimally invasive surgery” 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 7 90 min	Active participation in the lecture / online lecture	Active participation, questions for lecturer, discussion of possible problems	3 hours	Study activity: - Studying relevant parts of textbook (Surgical Techniques, pp 114-120) - Studying “lecture Minimally invasive surgery” 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			2 hours		Recap: reviewing self-assessment questions related to Lecture 7 (see later)
Week 15			1 hour		Recap: reviewing self-assessment questions related to Lecture 7 (see later)



1.2.7.2. Self-assessment questions

1. What are the main goals of minimally invasive surgery / laparoscopy?
2. What are the main advantages and disadvantages of minimally invasive surgical / laparoscopic procedures?
3. List the surgical procedures that can be performed with minimally invasive methods.
4. What is pneumoperitoneum?
5. What is insufflation, why is it necessary and by what means is it performed?
6. What is a trocar and how do we use it?
7. What are the main features of laparoscopy instruments?
8. What is the effect of laparoscopy-based insufflation on different organ systems?
9. What are the major pathophysiological consequences of laparoscopic surgery on microcirculation and liver function?
10. What can cause "laparoscopic pain" and how can it be treated?
11. What are the causes of abdominal pressure increase during laparoscopic surgery?
12. What are the most common complications of pneumoperitoneum?

1.2.7.3. Self-evaluation based on self-assessment questions

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

0–6 points: fail (1)

7 points: pass (2)

8-9 points: average (3)

10-11 points: good (4)

12 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 aims, advantages and disadvantages of minimally invasive surgery.		
2. The student knows the types of surgical intervention which can be performed with minimally invasive surgery.		
3. The student is familiar with the technical background of minimally invasive surgery.		
4. The student is familiar with the pathological consequences and complications of minimally invasive 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)

An increased intraabdominal pressure provided by pneumoperitoneum also helps prevention of venous and capillary bleeding. (*true*)

Advantages of minimally invasive surgery (Mark the correct answer) (1 point)

- a. Simultaneous diagnostic and therapeutic procedures
- b. Better cosmesis
- c. Fewer postoperative adhesions
- d. all of the above (a-c)**
- e. Lower cost of the operation than that of the open surgery
- f. all of the above (a-c, e)

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