

# **STUDY GUIDE**

## **Preparation for the PRACTICAL EXAM in “BASIC SURGICAL SKILLS”**

**Institute of Surgical Research, University of Szeged**

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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: workshops (based on individual group schedules; G.)**

Week	Programme	Monday	Tuesday	Wednesday	Thursday	Friday	Workshop topics
		12.00–13.00		11.00–12.00		14.00–16.00	
1	L+W	G. 1, 2, 3, 4, 8, 11		G. 5, 6, 7, 9, 10, 12		G. 13, 14, 15	Scrubbing
2	L+W	G. 1, 2, 3, 4, 8, 11		G. 5, 6, 7, 9, 10, 12		G. 13, 14, 15	Suturing, knotting
3	L+P						
4	L+P						
5	L+P						
6	L+W	G. 1, 2, 3, 4, 8, 11		G. 5, 6, 7, 9, 10, 12		G. 13, 14, 15	Isolation, bleeding
7	L+W	G. 1, 2, 3, 4, 8, 11		G. 5, 6, 7, 9, 10, 12		G. 13, 14, 15	Wounds, laparoscopy
8	P						
9	P						
10	P						
11		Break					
12	P						
13	W	G. 1, 2, 3, 4, 8, 11		G. 5, 6, 7, 9, 10, 12		G. 13, 14, 15	Prep. for practical exam
14	Practical exam						Practical exam
15	Practical exam						Practical exam

L: Lectures

W: Workshop: Dept. of Anatomy, lecture hall

P: Practices (Institute of Surgical Research, Pulz str. 1., Szeged)

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**Schedule and topics: practices (based on individual group schedules; G.)**

Week	Programme	Monday	Tuesday	Wednesday		Thursday	Friday	Practice topics
		12.00–14.00		12.00–14.00	14.00–16.00	15.00–17.00	14.00–15.30	
1	L+W							
2	L+W							
3	L+P	G. 1, 2, 8		G. 7, 9, 10	G. 3, 4, 11	G. 5, 6, 12	G. 13, 14, 15	1. Scrubbing
4	L+P	G. 1, 2, 8		G. 7, 9, 10	G. 3, 4, 11	G. 5, 6, 12	G. 13, 14, 15	2. Suturing (120')
5	L+P	G. 1, 2, 8		G. 7, 9, 10	G. 3, 4, 11	G. 5, 6, 12	G. 13, 14, 15	3. Knotting
6	L+W							
7	L+W							
8	P	G. 1, 2, 8		G. 7, 9, 10	G. 3, 4, 11	G. 5, 6, 12	G. 13, 14, 15	4. Isolation
9	P	G. 1, 2, 7		G. 7, 9, 10	G. 3, 4, 11	G. 5, 6, 12	G. 13, 14, 15	5. Wounds, bleeding
10	P	G. 1, 2, 8		G. 7, 9, 10	G. 3, 4, 11	G. 5, 6, 12	G. 13, 14, 16	6. Laparoscopy
11	<b>Break</b>							
12	P	G. 1, 2, 8		G. 7, 9, 10	G. 3, 4, 11	G. 5, 6, 12	G. 13, 14, 16	7. Suturing on tissue
13	W							
14	Practical exam	G. 1, 2, 8		G. 7, 9, 10	G. 3, 4, 11	G. 5, 6, 12	G. 13, 14, 15	Practical exam
15	Practical exam	G. 1, 2, 8		G. 7, 9, 10	G. 3, 4, 11	G. 5, 6, 12	G. 13, 14, 15	Practical exam

L: Lectures

W: Workshops

P: Practices (Institute of Surgical Research, Pulz u. 1., Szeged)

**Methods of preparation for the practical exam**

Practical exam tasks: (1) surgical scrubbing, gowning and gloving; (2) knotting under tension and in cavity; (3) Donati stitch (mounting the needle holder, a minimum of 4–6 stitches are placed into a 5-cm-long incision, knotting with instrument) (5 stitches + knots within 10 minutes)

Suggested steps of preparation:

1. Attendance at workshops (5 x 60 min):

Workshop topics:

1. Scrubbing, gowning and gloving
2. Suturing and knotting
3. Scrub preparation and draping of the surgical site, management of bleedings, advanced suturing
4. Wound management. Minimally invasive surgery
5. Administrative issues. Preparation for practical exam

2. Attendance at practices: in small-group system with a maximum of 5 students / trainer (see individual group schedules on CooSpace)

Venue for practices: Institute of Surgical Research (Pulz u. 1., Szeged)

**Szegedi Tudományegyetem**  
Cím: 6720 Szeged, Dugonics tér 13.  
[www.u-szeged.hu](http://www.u-szeged.hu)  
[www.szechenyi2020.hu](http://www.szechenyi2020.hu)



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**BEFEKTETÉS A JÖVŐBE**

Practice topics (9 x 2 hours):

1. General information. Scrubbing, gowning and gloving. Practical rules of asepsis in the operating room. Behaviour and movement in the operating room
2. Basic surgical instruments, suture materials, fabrics. Incisions, closing wounds in separate layers with sutures or with wound clips. Removal of sutures. Knotting with instruments using the Suture Tutor program.
3. Tying surgical knots. Tying surgical knots (hand- and instrument-tied knots). Knotting under tension and in cavities.
4. Scrubbing, gowning and gloving. Scrub preparation and draping of the surgical site.
5. Management of accidental wounds. Dressing, types of dressing. Changing dressing under aseptic conditions. Handling bleeding.
6. Basics of minimally invasive surgery. Components of the laparoscopic tower, laparoscopic instruments. Eupractic movements, handling of laparoscopic instruments, knotting.
7. Suturing of tissue under sterile circumstances.
- 8–9. Practical exam. (1) Surgical scrubbing and gowning; (2) Knotting under tension and in a deep cavity; (3) Surgical suture (mounting of a needle holder, closure of a 5-cm-long incision with Donati stitches, instrumental knotting)

3. Studying tutorial videos uploaded to CooSpace (wmv):

- Surgical scrubbing and hospital hand disinfection
- Methods of surgical gowning and gloving
- Techniques for 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

4. Studying evaluation criteria for practical exam (see Appendix) (see OSATS evaluation sheet at end of document)

5. Personal and online contact with the instructors (Institute of Surgical Research):

- Dr. habil. József Kaszaki (Associate Professor) [kaszaki.jozsef@med.u-szeged.hu](mailto:kaszaki.jozsef@med.u-szeged.hu)  
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## 1.1. Course description

Milestone:	Milestone code:
Subject: Basic Surgical Skills	Subject code: AOK-KUA110
<b>Course: Basic Surgical Skills practice</b>	<b>Course code: AOK-KUA112</b>
Course credit:	<b>0</b>
Form of course completion:	<b>practical exam (5-grade)</b>
Type of course:	<b>practice</b>
Characteristics of course:	<b>small-group practice</b>
Recommended term of completion:	<b>spring term</b>
Frequency of announcement of course:	<b>once a year</b>
No of course hours: - contact: - individual:	- contact: <b>23 hours</b> - individual: <b>24 hours</b>
No of course hours weekly:	<b>2</b>
Language of course:	<b>English</b>
Department offering course:	<b>Institute of Surgical Research, University of Szeged</b>
<b>Name and contact information of person in charge of course:</b>	Prof. Dr. Mihály Boros <a href="mailto:boros.mihaly@med.u-szeged.hu">boros.mihaly@med.u-szeged.hu</a>
<b>Name and contact information of course instructors:</b>	Dr. habil. József Kaszaki (Associate Professor) <a href="mailto:kaszaki.jozsef@med.u-szeged.hu">kaszaki.jozsef@med.u-szeged.hu</a> Dr. habil. Andrea Szabó (Associate Professor) <a href="mailto:szabo.andrea.exp@med.u-szeged.hu">szabo.andrea.exp@med.u-szeged.hu</a> Dr. József Császár (Associate Professor) <a href="mailto:csaszar.jozsef@med.u-szeged.hu">csaszar.jozsef@med.u-szeged.hu</a> Dr. Petra Hartmann (Assistant Professor) <a href="mailto:hartmann.petra@med.u-szeged.hu">hartmann.petra@med.u-szeged.hu</a> Dr. Gabriella Varga (Assistant Professor) <a href="mailto:varga.gabriella.1@med.u-szeged.hu">varga.gabriella.1@med.u-szeged.hu</a> Dr. Dániel Érces (Assistant Professor) <a href="mailto:erces.daniel@med.u-szeged.hu">erces.daniel@med.u-szeged.hu</a> Dr. Marietta Zita Poles (Assistant Professor) <a href="mailto:poles.marietta.zita@med.u-szeged.hu">poles.marietta.zita@med.u-szeged.hu</a> Dr. László Juhász (Assistant Professor) <a href="mailto:juhasz.laszlo.1@med.u-szeged.hu">juhasz.laszlo.1@med.u-szeged.hu</a> Dr. Szabolcs Tallósy (Assistant Professor) <a href="mailto:tallosy.szabolcs@med.u-szeged.hu">tallosy.szabolcs@med.u-szeged.hu</a> Dr. Tamara Horváth (Assistant Professor) <a href="mailto:horvath.tamara@med.u-szeged.hu">horvath.tamara@med.u-szeged.hu</a> Attila Rutai (Ph.D. student) <a href="mailto:rutai.attila@med.u-szeged.hu">rutai.attila@med.u-szeged.hu</a>

### 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) <i>(the present guide covers items marked in boldface)</i>			
Knowledge (lecture)	Skills (practice)	Attitudes (practice)	Autonomy-responsibility (practice)
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.	<b>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.</b>	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.	<b>The student performs all surgical asepsis procedures autonomously and accurately: surgical scrubbing, gowning and gloving under simulated operating conditions.</b> The student performs these procedures under supervision and under clinical conditions autonomously. <b>The student follows sterility regulations (good clinical practice requirements for asepsis) strictly during all procedures.</b>
	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		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>intervention, e.g. injection).</p> <p><b>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.</b></p>		<p><b>The student actively participates in cleansing and isolation of the surgical area under simulated conditions (as a member of the surgical team) under simulated operating conditions.</b> The student performs these procedures under supervision in clinical settings. <b>The student follows sterility regulations (good clinical practice requirements for asepsis) strictly during all procedures.</b></p>	
<p>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.</p>	<p><b>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.</b></p>	<p>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.</p>	<p><b>The student performs wound management and handles surgical bleeding autonomously under simulated operating conditions</b> and participates in these tasks under supervision (if requested by a supervisor) under clinical circumstances.</p>	
<p>The student knows:</p> <ul style="list-style-type: none"> <li>- the structure of the operating room,</li> <li>- the tasks of the operating team,</li> <li>- the most important surgical materials and instruments, and</li> <li>- procedures (including</li> </ul>	<p><b>The student handles surgical instruments used for surgical interventions, performs tissue separation, stitching and suturing (including mucosal sutures), and</b></p>	<p>The student is ready to adhere strictly to the principles of asepsis and conducts all procedures conscientiously. The student is ready to perform all</p>	<p><b>The student performs basic wound-closing methods</b> <b>HENYI</b> <b>autonomously under simulated operating conditions</b> and participates in</p>	

wound closure) used during surgical interventions. The student is aware of the related complications. The student knows the different types of operations, their indications and methods of patient preparation for surgery.	<b>performs surgical suturing in compliance with surgical regulations (good clinical practice), in the right order and with proper timing under simulated conditions.</b>	procedures precisely and in a self-disciplined manner. Owing to a self-reflective attitude, the student improves any misconduct during implementation.	wound closing procedures under supervision (if requested by a supervisor) under 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.	<b>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.</b>	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.	<b>The student performs basic surgical knotting autonomously under simulated operating conditions</b> 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.	<b>The student handles basic instruments for minimally invasive surgery in compliance with the rules (good clinical practice) of surgery under simulated conditions.</b>	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.	<b>The student handles basic instruments for minimally invasive surgery in compliance with the rules (good clinical practice) of surgery under simulated conditions.</b>

### 1.1.3. Prerequisites for course registration

Prerequisite: completion of the first 3 semesters and parallel enrolment in lectures

Criteria for completing the course: attendance at practices and completion of Coospace tasks: a minimum of 75% is compulsory. Completion of a successful practical exam (of all three practical exam tasks by the end of the semester).

### 1.1.4. Course content (main topics) – thematic units

#### Workshops (topics):

1. Scrubbing, gowning and gloving
2. Suturing and knotting
3. Scrub preparation and draping of the surgical site, management of bleedings, advanced suturing
4. Wound management. Minimally invasive surgery
5. Administrative issues. Preparation for practical exam

#### Practices (topics):

1. General information. Scrubbing, gowning and gloving. Practical rules of asepsis in the operating room. Behaviour and movement in the operating room.
2. Basic surgical instruments, suture materials, fabrics. Incisions, closing wounds in separate layers with sutures or with wound clips. Removal of sutures. Knotting with instruments using the Suture Tutor program.
3. Tying surgical knots. Tying surgical knots (hand- and instrument-tied knots). Knotting under tension and in cavities.
4. Scrubbing, gowning and gloving. Scrub preparation and draping of the surgical site.
5. Management of accidental wounds. Dressing, types of dressing. Changing dressing under aseptic conditions. Handling bleeding.
6. Basics of minimally invasive surgery. Components of the laparoscopic tower, laparoscopic instruments. Eupractic movements, handling of laparoscopic instruments, knotting.
7. Suturing of tissue under sterile circumstances
- 8–9. Practical exam. (1) Surgical scrubbing and gowning; (2) Knotting under tension and in a deep cavity; (3) Surgical suture (mounting of a needle holder, closure of a 5-cm-long incision with Donati stitches, instrumental knotting)



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### 1.1.5. Course schedule

Contact hours			Individual learning process	
Week	Hours	Content	Hours	Content
1	1	<b>Workshop 1.</b> Hospital hand disinfection. Surgical scrubbing, gowning and gloving. Positions held in the OR.	2	Individual preparation for practices held in weeks 3–5 Sources: - Workshop materials uploaded to CooSpace - Answering self-assessment questions (see later) - 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	1	<b>Workshop 2.</b> Wound closure with sutures. Knotting techniques.	2	Individual preparation for practices held in weeks 3–5 Sources: - Workshop materials uploaded to CooSpace - Answering self-assessment questions (see later) - Studying the following tutorial videos uploaded to CooSpace (wmv): Techniques for surgical (hand- and instrument-tied) knotting Advanced surgical knotting techniques Basic surgical suturing methods Laparotomy and multilayer closure of the abdominal wound in vivo.

3	<b>2</b>	<b>Practice 1.</b> Hospital hand disinfection. Surgical scrubbing, gowning and gloving. Rules of surgical asepsis in the OR. Positions held in the OR.	<b>2</b>	- Studying workshop material (Scrubbing) uploaded to CooSpace - Answering self-assessment questions (see later) - Completion of CooSpace tasks (see later) - Studying evaluation criteria for practical exam (see Appendix) (see OSATS evaluation sheet at end of document) - Studying the following tutorial videos uploaded to CooSpace (wmv): Surgical scrubbing and hospital hand disinfection Methods of surgical gowning and gloving
4	<b>2</b>	<b>Practice 2.</b> Wound closure. Basic surgical instruments, suture materials and fabrics. Incisions. Wound closure by suturing and staples (on an artificial skin phantom). Suturing with instruments using the Suture Tutor program.	<b>2</b>	- Studying workshop material (suturing) uploaded to CooSpace - Answering self-assessment questions (see later) - Completion of CooSpace tasks (see later) - Studying evaluation criteria for practical exam (see Appendix) (see OSATS evaluation sheet at end of document) - Studying the following tutorial videos uploaded to CooSpace (wmv): Basic surgical suturing methods Laparotomy and closure of the abdominal wound in multiple layers in vivo

5	2	<b>Practice 3.</b> Basics of knotting (using hand- and instrument-tied techniques). Surgical knotting under tension and in cavities.	2	<ul style="list-style-type: none"> <li>- Studying workshop material (knotting) uploaded to CooSpace</li> <li>- Answering self-assessment questions (see later)</li> <li>- Completion of CooSpace tasks (see later)</li> <li>- Studying evaluation criteria for practical exam (see Appendix) (see OSATS evaluation sheet at end of document)</li> <li>- Studying the following tutorial videos uploaded to CooSpace (wmv):           <ul style="list-style-type: none"> <li>Techniques for surgical (hand- and instrument-tied) knotting</li> <li>Advanced surgical knotting techniques</li> </ul> </li> <li>- Practising the major types of knots at home.</li> </ul>
6	1	<b>Workshop 3.</b> Recap: surgical scrubbing, gowning and gloving. Cleansing and isolation of the operative field. Positions held in the OR. Handling bleeding. Advanced suturing techniques.	2	<p>Individual preparation for practices held in weeks 8–10</p> <p>Sources:</p> <ul style="list-style-type: none"> <li>- Workshop materials uploaded to CooSpace</li> <li>- Answering self-assessment questions (see later)</li> <li>- Studying the following tutorial videos uploaded to CooSpace (wmv):           <ul style="list-style-type: none"> <li>Surgical scrubbing and hospital hand disinfection</li> <li>Methods of surgical gowning and gloving</li> <li>Cleansing and isolation of the operative field. Positions held in the OR.</li> <li>Laparotomy and closure of the abdominal wound in multiple layers in vivo.</li> </ul> </li> </ul>

7	<b>1</b>	<b>Workshop 4.</b> Wounds. Minimally invasive surgery.	<b>2</b>	Individual preparation for practices held in weeks 8–10  Sources: <ul style="list-style-type: none"> <li>- Workshop materials uploaded to CooSpace</li> <li>- Answering self-assessment questions (see later)</li> <li>- Studying the following tutorial videos uploaded to CooSpace (wmv):            Basic laparoscopic coordination exercises            Basic laparoscopic suturing and knotting techniques            Basic surgical suturing methods            Wound management and bandaging         </li></ul>
8	<b>2</b>	<b>Practice 4.</b> Recap: Scrubbing, gowning and gloving. Cleansing and isolation of the operative field. Positions held in the OR.	<b>2</b>	<ul style="list-style-type: none"> <li>- Studying workshop material (cleansing and isolation of the operative field) uploaded to CooSpace</li> <li>- Answering self-assessment questions (see later)</li> <li>- Completion of CooSpace tasks (see later)</li> <li>- 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.         </li></ul>
9	<b>2</b>	<b>Practice 5.</b> Recap: knotting. Wound management. Handling bleeding. Closure of the wound in multiple layers using sutures and staples. Drainage of the wound. Wound management.	<b>2</b>	<ul style="list-style-type: none"> <li>- Studying workshop material (wounds) uploaded to CooSpace</li> <li>- Answering self-assessment questions (see later)</li> <li>- Completion of CooSpace tasks (see later)</li> <li>- Studying the following tutorial videos uploaded to CooSpace (wmv):            Techniques for surgical (hand- and instrument-tied) knotting            Advanced surgical knotting techniques            Wound management and bandaging         </li></ul>

10	<b>2</b>	<b>Practice 6.</b> Recap: suturing. Minimally invasive surgery. Parts of the laparoscopic tower. Laparoscopic instruments and eye-hand coordination. Laparoscopic knotting.	<b>2</b>	- Studying workshop material (wounds) uploaded to CooSpace - Answering self-assessment questions (see later) - Completion of CooSpace tasks (see later) - Studying the following tutorial videos uploaded to CooSpace (wmv): Basic laparoscopic coordination exercises Basic laparoscopic suturing and knotting techniques Basic surgical suturing methods
11		Spring break		
12	<b>2</b>	<b>Practice 7.</b> Suturing tissues under sterile circumstances (on a biological model)	<b>1</b>	- Studying workshop material (suturing) uploaded to CooSpace - Answering self-assessment questions (see later) - Studying the following tutorial videos uploaded to CooSpace (wmv): Techniques for surgical (hand- and instrument-tied) knotting Basic surgical suturing methods Laparotomy and closure of the abdominal wound in multiple layers in vivo



13	<b>1</b>	<b>Workshop 5.</b> Preparation for practical exam.	<b>2</b>	Preparation for practical (OSATS) exam in weeks 14–15 Sources: - Workshop materials uploaded to CooSpace - Answering self-assessment questions (see later) - Studying evaluation criteria for practical exam (see Appendix) (see OSATS evaluation sheet at end of document) - Studying the following tutorial videos uploaded to CooSpace (wmv): Surgical scrubbing and hospital hand disinfection Methods of surgical gowning and gloving Techniques for surgical (hand- and instrument-tied) knotting Basic surgical suturing methods
14–15	<b>2x2</b>	Practical exam	<b>1</b>	Preparation for practical (OSATS) exam in weeks 14–15 Sources: - Studying evaluation criteria for practical exam (see Appendix) (see OSATS evaluation sheet at end of document) - Studying the following tutorial videos uploaded to CooSpace (wmv): Surgical scrubbing and hospital hand disinfection Methods of surgical gowning and gloving Techniques for surgical (hand- and instrument-tied) knotting Basic surgical suturing methods

### 1.1.6. Educational methodology used

Workshops: demonstration of good clinical practice, possibility of active participation in the simulation

Practice: repetitive practice in a small-group set-up

### 1.1.7. Further approaches used

- Studying online materials for lectures and workshops as well as tutorial videos
- Completion of CooSpace tasks
- Personal and online consultation with instructors for the practices
- Mock exam (see OSATS evaluation sheet at end of document)

### 1.1.8. Mid-year study requirements

Requirements for acknowledgement of practices: attending minimum of 75% of practices and completing minimum of 75% of CooSpace tasks.

### 1.1.9. Monitoring and evaluation of acquired knowledge and competencies

*Continuous:*

Interim evaluation: we evaluate the performance of the students on all practices and provide continuous feedback on their progress. The uploaded CooSpace tasks will be evaluated by the instructor of the group (pass / fail) and the most common mistakes will be highlighted in the course forum (anonymously).

*Final:*

Successful completion of the practical exam (all three practical exam tasks before the end of the semester).

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

Dressing rooms, scrubbing rooms, surgical scrub suits, caps, masks, shoe covers, surgical gowns and gloves, simulated operating rooms, surgical instruments, suture materials, suturing pads, knotting simulators, laparoscopic towers and instruments, and laparoscopic simulators are provided by our institute.

### 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).



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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 – Workshop 1. Scrubbing

#### 1.2.1.1. Study tasks

##### Content:

##### Main topic: Scrubbing

List of subtopics: Hospital hand disinfection. Surgical scrubbing, gowning and gloving. Rules of surgical asepsis in the OR. Positions held in the OR.

##### 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:

##### Technical foundation

Dressing rooms, scrubbing rooms, surgical scrub suits, caps, masks, shoe covers, surgical gowns and gloves, and simulated operating rooms are provided by our institute.

##### Study materials:

- Workshop materials uploaded to CooSpace
- Self-assessment questions (see later)
- 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		
<b>Week 1: 60 min</b>	Active participation in the workshop, mastering the methods of good clinical practice, participation in task demonstration	Active participation, questions for lecturer, discussion of possible problems	<b>2x60 min</b>	<p><b>Study activity:</b></p> <ul style="list-style-type: none"> <li>- Study workshop ppts uploaded to CooSpace</li> <li>- Watch related videos on 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.</li> </ul> <p><b>Special instructions:</b></p> <ul style="list-style-type: none"> <li>- Complete self-assessment questions related to the topic (see later)</li> <li>- Study evaluation criteria for practical exam (see Appendix) (see OSATS evaluation sheet at end of document)</li> </ul>

### 1.2.1.2. Self-assessment questions

1. How do we perform hospital hand disinfection?
2. What are the main elements of asepsis related to surgical interventions?
3. What kind of personal attire can be worn in the operating room?
4. Why and how do we wear surgical caps and masks?
5. What are the main steps of surgical scrubbing and gowning?
6. How should surgical gowns be put on and removed?
7. Surgical gown: which parts are considered as sterile and which parts cannot be regarded as sterile?
8. How is gloving performed before surgery in an assisted and in a self-assisted way?
9. How can we modify the size of the isolated surgical area and how can we move surgical isolating drapes if necessary?
10. What is the correct position of the hand after surgical scrubbing and gowning?



### 1.2.1.3. Self-evaluation based on self-assessment questions

Maximum number of points: 10. Successful completion requires completion of at least 60% (6 points).

0–5 points: fail (1)

6 points: pass (2)

7 points: average (3)

8 points: good (4)

9–10 points: excellent (5)

### 1.2.1.4. Evaluation criteria for practical exam (see Appendix) (see OSATS evaluation sheet at end of document)

## 1.2. Thematic units

### 1.2.2. Thematic unit 2 – Workshop 2. Wound closure with sutures. Knotting techniques.

#### 1.2.2.1. Study tasks

##### Content:

##### Main topic: Suturing

List of subtopics: Wound closure with sutures. Knotting techniques.

##### 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:

##### Technical foundation

Surgical instruments, suture materials, suturing pads and knotting simulators are provided by our institute.

##### Study materials:

- Workshop materials uploaded to CooSpace
- Self-assessment questions (see later)
- The following tutorial videos uploaded to CooSpace (wmv):

Techniques for 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.



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Contact hours		Individual learning process		
<b>Week 2: 60 min</b>	Active participation in the workshop, mastering the methods of good clinical practice, participation in task demonstration	Active participation, questions for lecturer, discussion of possible problems	<b>2x60 min</b>	<b>Study activity:</b> - Study workshop ppts uploaded to CooSpace - Watch related videos on CooSpace (wmv): Techniques for 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.

### 1.2.2.2. Self-assessment questions

1. How do we perform the different basic types of surgical knots?
2. How are a sailor's knot and surgeon's knot tied?
3. How are knots tied with instruments?
4. How do we tie a knot in a cavity?
5. How is knotting performed under tension?
6. How is a Donati stitch performed?
7. How are simple interrupted stitches performed?
8. How is a thread inserted into a conventional surgical needle?
9. How are surgical needles inserted into the needle holder?
10. What technique is used to roll the needle across the tissue?

### 1.2.2.3. Self-evaluation based on self-assessment questions

Maximum number of points: 10. Successful completion requires completion of at least 60% (6 points).

0–5 points: fail (1)

6 points: pass (2)

7 points: average (3)

8 points: good (4)

9–10 points: excellent (5)

### 1.2.2.4. Evaluation criteria for practical exam (see Appendix) (see OSATS evaluation sheet at end of document)

## 1.2. Thematic units

### 1.2.3. Thematic unit 3 – Practice 1. Surgical scrubbing, gowning and gloving. Rules of surgical asepsis in the OR. Positions held in the OR.

#### 1.2.3.1. Study tasks

##### Content:

##### Main topic: Scrubbing, gowning and gloving

List of subtopics: Putting on surgical scrub suit, cap, mask and shoe covers. Hospital hand disinfection. Surgical scrubbing, gowning and gloving.

##### 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.

##### Background:

##### Technical foundation

Dressing rooms, scrubbing rooms, surgical scrub suits, caps, masks, shoe covers, surgical gowns and gloves, and simulated operating rooms are provided by our institute.

##### Study materials:

- Workshop materials uploaded to CooSpace
- Self-assessment questions (see later)
- The following tutorial videos uploaded to CooSpace (wmv):
  - Surgical scrubbing and hospital hand disinfection
  - Methods of surgical gowning and gloving

Contact hours		Individual learning process			
<b>Week 3: 60 min</b>	Active participation in practice, mastering methods of good clinical practice.	Active participation, questions for instructor, discussion of possible problems	<b>2x60 min</b>	<b>Study activity:</b> - Study workshop ppts uploaded to CooSpace - Watch related videos on CooSpace (wmv): Surgical scrubbing and hospital hand disinfection Methods of surgical gowning and gloving	<b>Special instructions:</b> - Complete self-assessment questions related to the topic (see later) - Answer and upload completed tasks on CooSpace (see later) - Study evaluation criteria for practical exam (see Appendix) (see OSATS evaluation sheet at end of document)

### 1.2.3.2. Self-assessment questions

1. How do we perform hospital hand disinfection?
2. What are the main elements of asepsis related to surgical interventions?
3. What kind of personal attire can be worn in the operating room?
4. Why and how do we wear surgical caps and masks?
5. What are the main steps of surgical scrubbing and gowning?
6. How should surgical gowns be put on and removed?
7. Surgical gown: which parts are considered as sterile and which parts cannot be regarded as sterile?
8. How is gloving performed before surgery in an assisted and in a self-assisted way?
9. How can we modify the size of the isolated surgical area and how do we move surgical isolating drapes if necessary?
10. What is the correct position of the hand after surgical scrubbing and gowning?



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### 1.2.3.3. Self-evaluation based on self-assessment questions

Maximum number of points: 10. Successful completion requires completion of at least 60% (6 points).

0–5 points: fail (1)

6 points: pass (2)

7 points: average (3)

8 points: good (4)

9–10 points: excellent (5)

### 1.2.3.4. Tasks uploaded to CooSpace

1. What are the main steps in surgical scrubbing?
2. Why do we always keep our hands above the level of the elbow during rinsing phase of surgical scrubbing?
3. What is the difference between the donning method of disposable and traditional cloth gowns?
4. What is the proper posture of hands during gowning?
5. What is the proper way to adjust the cuffs at the wrists if it is necessary?
6. During assisted gloving which surface of the glove can be touched with the other hand to expand the aperture of the glove at the following phases?
  - a. when putting the first glove on
  - b. when putting the second glove on
7. What is the proper way of removing gloves and gowns?

### 1.2.3.5. Evaluation of CooSpace tasks

The answers will be evaluated by the instructor of the group (pass / fail) and the most common mistakes will be highlighted in the course forum (anonymously).

### 1.2.3.6. Evaluation criteria for practical exam (see Appendix) (see OSATS evaluation sheet at end of document)

## 1.2. Thematic units

### 1.2.4. Thematic unit 4 – Practice 2. Suturing

#### 1.2.4.1. Study tasks

##### Content:

##### Main topic: Wound closure with sutures

List of subtopics: Basic surgical instruments, suture materials and fabrics. Incisions. Wound closure by suturing and staples (on an artificial skin phantom). Suturing with instruments using the Suture Tutor program.

##### Learning outcome of thematic unit:

The student handles surgical instruments used for surgery, 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 conditions.

##### Background:

##### Technical foundation

Surgical instruments, suture materials, suturing pads and knotting simulators are provided by our institute.

##### Study materials:

- Workshop materials uploaded to CooSpace
- Self-assessment questions (see later)
- The following tutorial videos uploaded to CooSpace (wmv):
  - Basic surgical suturing methods
  - Laparotomy and closure of the abdominal wound in multiple layers in vivo

Contact hours		Individual learning process			
<b>Week 4: 60 min</b>	Active participation in practice, mastering methods of good clinical practice.	Active participation, questions for instructor, discussion of possible problems	<b>2x60 min</b>	<b>Study activity:</b> <ul style="list-style-type: none"> <li>- Study workshop ppts uploaded to CooSpace</li> <li>- Watch related videos on CooSpace (wmv): Basic surgical suturing methods Laparotomy and closure of the abdominal wound in multiple layers in vivo</li> </ul>	<b>Special instructions:</b> <ul style="list-style-type: none"> <li>- Complete self-assessment questions related to the topic (see later)</li> <li>- Answer and upload completed tasks on CooSpace (see later)</li> <li>- Study evaluation criteria for practical exam (see Appendix) (see OSATS evaluation sheet at end of document)</li> </ul>

#### 1.2.4.2. Self-assessment questions

1. How is a Donati stitch performed?
2. How are simple interrupted stitches performed?
3. How is a thread inserted into a conventional surgical needle?
4. How are surgical needles inserted into the needle holder?
5. What technique is used to roll the needle across the tissue?
6. What is the difference between conventional (French-eyed) and atraumatic needles?
7. How is knotting performed with an instrument?
8. How do we remove simple interrupted stitches?
9. What is the proper method for removing a Donati suture?
10. What is the difference between interrupted and continuous sutures?



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#### 1.2.4.3. Self-evaluation based on self-assessment questions

Maximum number of points: 10. Successful completion requires completion of at least 60% (6 points).

0–5 points: fail (1)

6 points: pass (2)

7 points: average (3)

8 points: good (4)

9–10 points: excellent (5)

#### 1.2.4.4. Tasks uploaded to CooSpace

1. What is the proper way to hold scalpels, forceps, needle holders and scissors?
2. In case of Donati stitch, how deep should the stitch be placed from the wound edge at the first and the second stitch, respectively?
3. What is the ideal distance between two Donati stitches?
4. For what purpose are horizontal mattress sutures used in surgery (most frequently)?
5. In which skin layer is the subcuticular continuous suture placed?
6. What are the advantages of a median laparotomy?
7. What is the proper way to perform an incision?
8. What types of surgical sutures (with what kind of suture materials) are used when closing different layers of the abdominal wall?
9. What principles should be followed when placing a running suture?
10. What are the possible consequences of an inappropriate closure of the linea alba?
11. What principles should be followed when closing the subcutaneous layer?

#### 1.2.4.5. Evaluation of CooSpace tasks

The answers will be evaluated by the instructor of the group (pass / fail) and the most common mistakes will be highlighted in the course forum (anonymously).



#### 1.2.4.6. Evaluation criteria for practical exam (see Appendix) (see OSATS evaluation sheet at end of document)

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## 1.2. Thematic units

### 1.2.5. Thematic unit 5 – Practice 3. Knotting

#### 1.2.5.1. Study tasks

##### Content:

##### Main topic: Basics of knotting

List of subtopics: Hand- and instrument-tied techniques. Surgical knotting under tension and in cavities.

##### Learning outcome of thematic unit:

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.

##### Background:

##### Technical foundation

Surgical instruments, suture materials and knotting simulators are provided by our institute.

##### Study materials:

- Workshop materials uploaded to CooSpace
- Self-assessment questions (see later)
- The following tutorial videos uploaded to CooSpace (wmv):
  - Techniques for surgical (hand- and instrument-tied) knotting.
  - Advanced surgical knotting techniques

Contact hours		Individual learning process		
<b>Week 5: 60 min</b>	Active participation in practice, mastering the methods of good clinical practice.	Active participation, questions for instructor, discussion of possible problems	<b>2x60 min</b>	<p><b>Study activity:</b></p> <ul style="list-style-type: none"> <li>- Study workshop ppts uploaded to CooSpace</li> <li>- Watch related videos on CooSpace (wmv): Techniques for surgical (hand-and instrument-tied) knotting Advanced surgical knotting techniques</li> </ul> <p><b>Special instructions:</b></p> <ul style="list-style-type: none"> <li>- Complete self-assessment questions related to the topic (see later)</li> <li>- Answer and upload completed tasks on CooSpace (see later)</li> <li>- Study evaluation criteria for practical exam (see Appendix) (see OSATS evaluation sheet at end of document)</li> <li>- Practise the major types of knots at home.</li> </ul>

### 1.2.5.2. Self-assessment questions

1. How do we tie a sailor's knot?
2. How do we tie a surgeon's knot?
3. How do we tie a Viennese knot?
4. How do we tie knots with instruments?
5. How is knotting performed under tension?
6. How do we tie a knot in a cavity?
7. What is the difference between knots tied using sailor's, surgeon's and Viennese knotting techniques?
8. Why do we pass the thread from one hand to the other between two knots?
9. What is the ideal number of half-hitches when knotting by hand?
10. When passing the thread from one hand to the other, which thread do we use in the cases of sailor's, surgeon's and Viennese knotting?



### 1.2.5.3. Self-evaluation based on self-assessment questions

Maximum number of points: 10. Successful completion requires completion of at least 60% (6 points).

0–5 points: fail (1)

6 points: pass (2)

7 points: average (3)

8 points: good (4)

9–10 points: excellent (5)

### 1.2.5.4. Tasks uploaded to CooSpace

1. At which two handed knotting technique should the lower thread be passed to the other hand between to knots?
2. What is the indication of knotting with one hand and an instrument?
3. Which type of two-handed knotting technique is the fastest to perform? What are the disadvantages of this particular type of knotting?
4. By which knotting method(s) can the loosening of a knot be avoided?
5. What is the difference between the result (structure) of tying a sailors' knot and a Viennese knot?

### 1.2.5.5. Evaluation of CooSpace tasks

The answers will be evaluated by the instructor of the group (pass / fail) and the most common mistakes will be highlighted in the course forum (anonymously).

### 1.2.5.6. Evaluation criteria for practical exam (see Appendix) (see OSATS evaluation sheet at end of document)

## 1.2. Thematic units

### 1.2.6. Thematic unit 6 – Workshop 3. Cleansing and isolation of the operative field. Handling bleeding. Advanced suturing techniques.

#### 1.2.6.1. Study tasks

##### Content:

**Main topic: Cleansing and isolation of the operative field. Positions held in the OR. Handling bleeding. Advanced suturing techniques.**

##### List of subtopics:

Recap: surgical scrubbing-gowning and gloving. Cleansing and isolation of the operative field. Positions held in the OR. Handling bleeding.

Advanced suturing techniques.

##### Learning outcome of thematic unit:

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:

##### Technical foundation

Dressing rooms, scrubbing rooms, surgical scrub suits, caps, masks, shoe covers, surgical gowns and gloves, and simulated operating rooms and materials used for surgical cleansing and isolation of the operative field are provided by our institute.

##### Study materials:

- Workshop materials uploaded to CooSpace
- Self-assessment questions (see later)
- 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.
  - Laparotomy and closure of the abdominal wound in multiple layers in vivo.

Contact hours		Individual learning process		
<b>Week 6: 60 min</b>	Active participation in workshop, mastering the methods of good clinical practice, participation in the demonstration of the task	Active participation, questions for lecturer, discussion of possible problems	<b>2x60 min</b>	<p><b>Study activity:</b></p> <ul style="list-style-type: none"> <li>- Study workshop ppts uploaded to CooSpace</li> <li>- Watch related videos on 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. Laparotomy and closure of the abdominal wound in multiple layers in vivo.</li> </ul>

### 1.2.6.2. Self-assessment questions

1. What gloves do we wear when scrubbing the operative field?
2. How do we cleanse the operative field?
3. What clothing should be worn when isolating the operative field?
4. What principles should be followed when taking a position at the isolated operating table?
5. How do we perform haemostasis using surgical instruments?
6. What disinfectant fluids can be used to cleanse the surgical area?
7. How do we position the isolating sheets during the isolation of the surgical area?
8. What is the difference between the assisted and the self-assisted gloving techniques?
9. What is regarded as sterile at the operating table and its surroundings after completion of surgical isolation of the operative field?



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## 10. What is Opsite?

### 1.2.6.3. Self-evaluation based on self-assessment questions

Maximum number of points: 10. Successful completion requires completion of at least 60% (6 points).

0–5 points: fail (1)

6 points: pass (2)

7 points: average (3)

8 points: good (4)

9–10 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. Performs cleansing of the surgical area in compliance with relevant surgical regulations (good clinical practice), in the right order and with proper timing under simulated conditions.		
2. Performs 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.		
3. Performs surgical bleeding management in compliance with regulations (good clinical practice), in the right order and with proper timing under simulated conditions.		



## 1.2. Thematic units

### 1.2.7. Thematic unit 7 – Workshop 4. Wounds. Minimally invasive surgery

#### 1.2.7.1. Study tasks

##### Content:

**Main topic:** Wounds. Minimally invasive surgery

List of subtopics:

Management of accidental wounds. Demonstration of the basic laparoscopy set-up and instruments

##### Learning outcome of thematic unit:

The student is familiar with principles, technical foundation, instruments, 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.

##### Background:

##### Technical foundation

Simulated operating rooms, laparoscopic tower, instruments and suture materials as well as materials and instruments used for handling bleeding are provided by our institute.

##### Study materials:

- Workshop materials uploaded to CooSpace
- Self-assessment questions (see later)
- The following tutorial videos uploaded to CooSpace (wmv):
  - Basic laparoscopic coordination exercises
  - Basic laparoscopic suturing and knotting techniques
  - Basic surgical suturing methods
  - Wound management and bandaging

Contact hours		Individual learning process		
<b>Week 7: 60 min</b>	Active participation in workshop, mastering the methods of good clinical practice, participation in the demonstration of the task	Active participation, questions for lecturer, discussion of possible problems	<b>2x60 min</b>	<p><b>Study activity:</b></p> <ul style="list-style-type: none"> <li>- Study workshop ppts uploaded to CooSpace</li> <li>- Watch related videos on CooSpace (wmv): Basic laparoscopic coordination exercises Basic laparoscopic suturing and knotting techniques Basic surgical suturing methods Wound management and bandaging</li> </ul> <p><b>Special instructions:</b></p> <ul style="list-style-type: none"> <li>- Complete self-assessment questions related to the topic (see later)</li> <li>- Study evaluation criteria for practical exam (see Appendix) (see OSATS evaluation sheet at end of document)</li> </ul>

### 1.2.7.2. Self-assessment questions

1. Which occasional wound types can be closed in the primary way?
2. How do we treat an abscess?
3. How do we make an adhesive and covering bandage?
4. How do we make pressure, wedged and compression bandages?
5. How do we make an ear bandage?
6. How can we change the magnification on a laparoscope?
7. How do we make a sliding knot?
8. What technique do we use to grip the needle with a laparoscope?
9. How do we perform laparoscopic knotting?
10. List the surgical procedures that can be performed with minimally invasive methods!

### 1.2.7.3. Self-evaluation based on self-assessment questions

Maximum number of points: 10. Successful completion requires completion of at least 60% (6 points).

0–5 points: fail (1)

6 points: pass (2)

7 points: average (3)

8 points: good (4)

9–10 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 is able to implement the main types of bandages.		
2. The student has the eye-hand coordination skills required to perform instrumental interventions in a simulated environment.		
3. The student is able to use the basic tools of minimally invasive surgery in compliance with the rules of good clinical practice.		
4. The student is able to perform laparoscopic stitching and knotting in compliance with the rules of good clinical practice.		

## 1.2. Thematic units

### 1.2.8. Thematic unit 8 – Practice 4. Cleansing and isolation of the operative field.

#### 1.2.8.1. Study tasks

##### Content:

**Main topic:** Cleansing and isolation of the operative field.

List of subtopics: Recap: Scrubbing, gowning and gloving. Cleansing and isolation of the operative field. Positions held in the OR.

##### Learning outcome of thematic unit:

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 :

##### Technical foundation

Dressing rooms, scrubbing rooms, surgical scrub suits, caps, masks, shoe covers, surgical gowns and gloves, and simulated operating rooms and materials used for surgical cleansing and isolation of the operative field are provided by our institute.

##### Study materials:

- Workshop materials uploaded to CooSpace
- Self-assessment questions (see later)
- 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.



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Contact hours		Individual learning process		
<b>Week 8: 60 min</b>	Active participation in practice, mastering the methods of good clinical practice.	Active participation, questions for instructor, discussion of possible problems	<b>2x60 min</b>	<b>Study activity:</b> - Study workshop ppts uploaded to CooSpace - Watch related videos on 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.

### 1.2.8.2. Self-assessment questions

1. What gloves do we wear when scrubbing the operative field?
2. How do we cleanse the operative field?
3. What clothing should be worn when isolating the operative field?
4. What principles should be followed when taking a position at the isolated operating table?
5. How do we perform haemostasis using surgical instruments?
6. What disinfectant fluids can be used to cleanse the surgical area?
7. How do we position the isolating sheets during isolation of the surgical area?
8. What is the difference between the assisted and the self-assisted gloving techniques?
9. What is regarded as sterile at the operating table and its surroundings after completion of surgical isolation of the operative field?
10. What is Opsite?



#### 1.2.8.3. Self-evaluation based on self-assessment questions

Maximum number of points: 10. Successful completion requires completion of at least 60% (6 points).

0–5 points: fail (1)

6 points: pass (2)

7 points: average (3)

8 points: good (4)

9–10 points: excellent (5)

#### 1.2.8.4. Tasks uploaded to CooSpace

1. What are the necessary steps of preparation before cleansing the surgical field?
2. How do we apply the disinfectant solution to the surgical fields during surgical cleansing and how many times should this be repeated?
3. What clothing should be worn when isolating the surgical area?
4. What are the steps in surgical isolation?
5. Which areas considered sterile after isolation of the operative field?

#### 1.2.8.5. Evaluation of CooSpace tasks

The answers will be evaluated by the instructor of the group (pass / fail) and the most common mistakes will be highlighted in the course forum (anonymously).



### 1.2.8.6. 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. Performs cleansing of the surgical area in compliance with relevant surgical regulations (good clinical practice), in the right order and with proper timing under simulated conditions.		
2. Performs 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.		
3. Performs surgical bleeding management in compliance with regulations (good clinical practice), in the right order and with proper timing under simulated conditions.		

## 1.2. Thematic units

### 1.2.9. Thematic unit 9 – Practice 5. Wound management

#### 1.2.9.1. Study tasks

##### Content:

**Main topic:** Wound management

List of subtopics: Wound management. Handling bleeding. Closure of the wound in multiple layers using sutures and staples. Drainage of the wound. Wound management.

##### Learning outcome of thematic unit:

The student is familiar with principles, materials and methods related to wound management and handling 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.

##### Background:

##### Technical foundation

Simulated operating rooms, materials and instruments used for handling bleeding are provided by our institute.

##### Study materials:

- Workshop materials uploaded to CooSpace
- Self-assessment questions (see later)
- The following tutorial videos uploaded to CooSpace (wmv):
  - Techniques for surgical (hand- and instrument-tied) knotting
  - Advanced surgical knotting techniques
  - Wound management and bandaging
  - Laparotomy and closure of the abdominal wound in multiple layers in vivo

Contact hours		Individual learning process		
<b>Week 9: 60 min</b>	Active participation in practice, mastering the methods of good clinical practice.	Active participation, questions for instructor, discussion of possible problems	<b>2x60 min</b>	<p><b>Study activity:</b></p> <ul style="list-style-type: none"> <li>- Study workshop ppts uploaded to CooSpace</li> <li>- Watch related videos on CooSpace (wmv): Techniques for surgical (hand-and instrument-tied) knotting Advanced surgical knotting techniques Wound management and bandaging Laparotomy and closure of the abdominal wound in multiple layers in vivo</li> </ul>

### 1.2.9.2. Self-assessment questions

1. How do we perform primary wound closure?
2. How do we make an adhesive and covering bandage?
3. How do we perform pressure bandaging?
4. How do we perform wedged bandaging?
5. How do we perform compression bandaging?
6. How do we perform steam bandaging?
7. How do we perform bandaging?
8. How do we perform haemostasis using surgical instruments?
9. What are the methods for haemostasis?



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- What knotting techniques should we use during haemostasis?

#### 1.2.9.3. Self-evaluation based on self-assessment questions

Maximum number of points: 10. Successful completion requires completion of at least 60% (6 points).

0–5 points: fail (1)

6 points: pass (2)

7 points: average (3)

8 points: good (4)

9–10 points: excellent (5)

#### 1.2.9.4. Tasks uploaded to CooSpace

- What is the difference between the aims of compressing, pressing and wedging bandages?
- What options for wound closure do you know?

#### 1.2.9.5. Evaluation of CooSpace tasks

The answers will be evaluated by the instructor of the group (pass / fail) and the most common mistakes will be highlighted in the course forum (anonymously).



### 1.2.9.6. 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 performs wound care and performs the main types of dressings in accordance with the rules and duration of the profession.		
2. The student performs surgical haemostasis under simulated conditions in a manner and for a period of time in compliance with the rules of good clinical practice.		

## 1.2. Thematic units

### 1.2.10. Thematic unit 10 – Practice 6. Minimally invasive surgery

#### 1.2.10.1. Study tasks

##### Content:

**Main topic:** Minimally invasive surgery

List of subtopics: Recap: suturing. Minimally invasive surgery. Parts of the laparoscopic tower. Laparoscopic instruments and eye-hand coordination. Laparoscopic knotting.

##### Learning outcome of thematic unit:

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

##### Background:

##### Technical foundation

Simulated operating rooms, laparoscopic tower, instruments and suture materials as well materials and instruments used for handling bleeding are provided by our institute.

##### Study materials:

- Workshop materials uploaded to CooSpace
- Self-assessment questions (see later)
- The following tutorial videos uploaded to CooSpace (wmv):
  - Basic laparoscopic coordination exercises
  - Basic laparoscopic suturing and knotting techniques
  - Basic surgical suturing methods

Contact hours			Individual learning process		
Week <b>10:</b> <b>60 min</b>	Active participation in practice, mastering the methods of good clinical practice.	Active participation, questions for instructor, discussion of possible problems	<b>2x60 min</b>	<b>Study activity:</b> - Study workshop ppts uploaded to CooSpace - Watch related videos on CooSpace (wmv): Basic laparoscopic coordination exercises Basic laparoscopic suturing and knotting techniques Basic surgical suturing methods	<b>Special instructions:</b> - Complete self-assessment questions related to the topic (see later) - Answer and upload completed tasks on CooSpace (see later)

### 1.2.10.2. Self-assessment questions

1. How can we change the magnification on a laparoscope?
2. How do we make a sliding knot?
3. What technique do we use to grip the needle with a laparoscope?
4. How do we perform laparoscopic knotting?
5. List the surgical procedures that can be performed with minimally invasive methods.
6. What is a trocar?
7. What is a Veress needle?
8. What types of cameras are used in laparoscopic surgeries?
9. How is laparoscopic knotting different from the previously learned instrumental knotting technique?
10. How many half-hitches are made during laparoscopic knotting?

### 1.2.10.3. Self-evaluation based on self-assessment questions

Maximum number of points: 10. Successful completion requires completion of at least 60% (6 points).

0–5 points: fail (1)

6 points: pass (2)

7 points: average (3)

8 points: good (4)

9–10 points: excellent (5)

### 1.2.10.4. Tasks uploaded to CooSpace

1. What are the main advantages of minimally invasive interventions?
2. What are the main types of instruments used in laparoscopy?
3. What are the parts of the laparoscopic tower?
4. What are the major difficulties of the laparoscopic technique and how can these be overcome?

### 1.2.10.5. Evaluation of CooSpace tasks

The answers will be evaluated by the instructor of the group (pass / fail) and the most common mistakes will be highlighted in the course forum (anonymously).



### 1.2.10.6. 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 has the eye-hand coordination skills required to perform instrumental interventions in a simulated environment.		
2. The student is able to use the basic tools of minimally invasive surgery in compliance with the rules of good clinical practice.		
3. The student is able to perform laparoscopic stitching and knotting in compliance with the rules of good clinical practice.		

## 1.2. Thematic units

### 1.2.11. Thematic unit 11 – Practice 7. Suturing tissues under sterile circumstances

#### 1.2.11.1. Study tasks

##### Content:

**Main topic:** Minimally invasive surgery

List of subtopics: Suturing tissues under sterile circumstances (on a biological model)

##### Learning outcome of thematic unit:

The student handles surgical instruments properly, 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 conditions.

##### Background:

##### Technical foundation

surgical instruments, suture materials, suturing pads and knotting simulators are provided by our institute.

##### Study materials:

- Workshop materials uploaded to CooSpace
- Self-assessment questions (see later)
- The following tutorial videos uploaded to CooSpace (wmv):
  - Techniques for 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

Contact hours		Individual learning process			
<b>Week 12: 60 min</b>	Active participation in practice, mastering the methods of good clinical practice.	Active participation, questions for instructor, discussion of possible problems	<b>2x60 min</b>	<p><b>Study activity:</b></p> <ul style="list-style-type: none"> <li>- Study workshop ppt uploaded to CooSpace</li> <li>- Watch related videos on CooSpace (wmv): Techniques for 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.</li> </ul>	<p><b>Special instructions:</b></p> <ul style="list-style-type: none"> <li>- Complete self-assessment questions related to the topic (see later)</li> <li>- Study evaluation criteria for practical exam (see Appendix) (see OSATS evaluation sheet at end of document)</li> </ul>

### 1.2.11.2. Self-assessment questions

1. How is a Donati stitch made?
2. How are simple interrupted stitches made?
3. How is a thread inserted into a conventional surgical needle?
4. How are surgical needles inserted into the needle holder?
5. What technique is used to roll the needle across the tissue?
6. What is the difference between conventional (French-eyed) and atraumatic needles?
7. How is knotting performed with an instrument?
8. How do we remove simple interrupted stitches?
9. What is the proper method for removing a Donati suture?
10. What is the difference between interrupted and continuous sutures?



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### 1.2.11.3. Self-evaluation based on self-assessment questions

Maximum number of points: 10. Successful completion requires completion of at least 60% (6 points).

0–5 points: fail (1)

6 points: pass (2)

7 points: average (3)

8 points: good (4)

9–10 points: excellent (5)

### 1.2.11.4. Evaluation criteria for practical exam (see Appendix) (see OSATS evaluation sheet at end of document)



## 1.2. Thematic units

### 1.2.12. Thematic unit 12 – Workshop 5. Preparation for practical exam in weeks 14–15

#### 1.2.12.1. Study tasks

##### Content:

**Main topic:** Preparation for practical exam

List of subtopics: Surgical scrubbing, gowning and gloving. Suturing. Hand-tied knotting

##### 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 handles surgical instruments, 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 conditions.

The student performs surgical knotting (under tension) in compliance with surgical regulations (good clinical practice), in the right order and with proper timing under simulated conditions.

##### Background:

##### Technical foundation

Dressing rooms, scrubbing rooms, surgical scrub suits, caps, masks, shoe covers, surgical gowns and gloves, simulated operating rooms, surgical instruments, suture materials, suturing pads, knotting simulators, laparoscopic towers and instruments, and laparoscopic simulators are provided by our institute.

##### Study materials:

- Workshop materials uploaded to CooSpace
- Self-assessment questions (see later)
- Evaluation criteria for practical exam (see Appendix) (see OSATS evaluation sheet at end of document)
- The following tutorial videos uploaded to CooSpace (wmv):
  - Surgical scrubbing and hospital hand disinfection
  - Methods of surgical gowning and gloving
  - Techniques for surgical (hand- and instrument-tied) knotting
  - Basic surgical suturing methods

Contact hours		Individual learning process		
<b>Week 13: 60 min</b>	Active participation in workshop, mastering the methods of good clinical practice, participation in the demonstration of the task	Active participation, questions for lecturer, discussion of possible problems	<b>2x60 min</b>	<p><b>Study activity:</b></p> <ul style="list-style-type: none"> <li>- Study workshop ppts uploaded to CooSpace</li> <li>- Watch related videos on CooSpace (wmv): Surgical scrubbing and hospital hand disinfection Methods of surgical gowning and gloving Techniques for surgical (hand- and instrument-tied) knotting Basic surgical suturing methods</li> </ul>

### 1.2.12.2. Self-assessment questions

1. Why and how do we put on a cap and mask in surgery?
2. What are the steps of surgical scrubbing?
3. How is the surgical gown donned and removed?
4. How is gloving performed before surgery in an assisted and in a self-assisted way?
5. If necessary, how can we modify the extent of isolation?
6. What is the correct hand position after surgical scrubbing and gloving?
7. How is the Donati stitch performed?
8. How is a thread inserted into a conventional surgical needle?
9. What technique is used to roll the needle across the tissue?
10. How do we perform different forms of surgical knotting?



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### 1.2.12.3. Self-evaluation based on self-assessment questions

Maximum number of points: 10. Successful completion requires completion of at least 60% (6 points).

0–5 points: fail (1)

6 points: pass (2)

7 points: average (3)

8 points: good (4)

9–10 points: excellent (5)

### 1.2.12.4. Evaluation criteria for practical exam (see Appendix) (see OSATS evaluation sheet at end of document)

## 1.2. Thematic units

### 1.2.13–14. Thematic units 13–14 – Practical exam (1–2)

#### 1.2.13–14.1. Study tasks

##### Content:

**Main topic:** Practical exam

List of subtopics: Surgical scrubbing, gowning and gloving. Suturing. Hand-tied knotting

##### 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 properly handles surgical instruments used for surgical 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 conditions.

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.

##### Background:

##### Technical foundation

Dressing rooms, scrubbing rooms, surgical scrub suits, caps, masks, shoe covers, surgical gowns and gloves, simulated operating rooms, surgical instruments, suture materials, suturing pads and knotting simulators are provided by our institute.

##### Study materials:

- Workshop materials uploaded to CooSpace

- Evaluation criteria for practical exam (see Appendix) (see OSATS evaluation sheet at end of document)

- The following tutorial videos uploaded to CooSpace (wmv):

    Surgical scrubbing and hospital hand disinfection

    Methods of surgical gowning and gloving

    Techniques for surgical (hand- and instrument-tied) knotting

    Basic surgical suturing methods

Contact hours		Individual learning process		
<b>Weeks 14–15</b> <b>60 min</b>	Exam tasks: (1) Surgical scrubbing, gowning and gloving. (2) Suturing. (3) Hand-tied knotting		<b>60 min</b> <b>Study activity:</b> - Study workshop ppts uploaded to CooSpace - Watch related videos on CooSpace (wmv): Surgical scrubbing and hospital hand disinfection Methods of surgical gowning and gloving Techniques for surgical (hand- and instrument-tied) knotting Basic surgical suturing methods	<b>Special instructions:</b> - Study evaluation criteria for practical exam (see Appendix) (see OSATS evaluation sheet at end of document)

### 1.2.13–14.2. Evaluation of the practical exam

Completion of all three exam tasks is mandatory in weeks 14–15. It is possible to improve the exam tasks for certain grades. The grade results from the average for the three exam tasks.

### 1.2.13–14.3. Evaluation criteria for practical exam (see Appendix) (see OSATS evaluation sheet at end of document)

Institute of Surgical Research “Basic Surgical Skills” practical exam (OSATS=Organized Structured Assessment of Technical Skills)  
 Each student starts from grade 5, which will be reduced by 1 grade each for errors/mistakes. Serious errors result in the exam being repeated.  
 If a student recognizes a mistake or misconduct, verbally indicates and corrects\* it during certain procedures, no mark is deducted.

### Evaluation of Task 1. Scrubbing, gowning and gloving

Phases	Skill	Mistakes: 1 mark deducted each (-1 point)	Deduction
Repetition of the exam task is required after -4 points			
Preparation for scrubbing	Putting on cap, mask and shoe covers properly; sleeves do not cover the forearm.	Any of them is missing. Faulty wear (e.g. uncovered hair and nose). Sleeve(s) cover the forearm	
	Removal of ring, watch, bracelet and nail polish.	Wearing rings, a wristwatch, bracelets, nail polish etc.	
Hygienic hand wash	Before the mechanical phase, washing hands with soap to remove coarse dirt and rinsing.	Hygienic hand wash is missing. Soap foam residue after hand wash *	
	Throughout washing of hands and forearms, washing with soap for a maximum of 2 minutes.	Missing mechanical scrub. Inappropriate scrubbing area, timing or order.	
Mechanical scrub	Proper rinsing of hands and forearms after mechanical scrubbing.	Mechanical phase is missing.	
	During rinsing, hands are always held above elbow level.	Hands are below level of elbows while rinsing. *	
	Careful rinsing off of soap foam.	Soap foam residue on the forearm. *	
	Closing of water tap with elbows.	Water tap closed with hands or forearms. *	
	During scrubbing, no equipment, own body parts or those of another person are touched.	Breaching the rules of asepsis, e.g. touching non-sterile items. *	
	After rinsing, hands and forearms are wiped dry.	Wiping is missing after the mechanical phase. *	
	Hand disinfectant feeder is operated with elbows.	Touching the feeder with hand or forearm. *	
Chemical scrub	Disinfection: 5 phases each, 1 minute each.	Missing, less phases, misconduct and/or reduced duration.	
	Performed at the distal forearm and 6 typical parts of hand.	Incorrect area of disinfection. *	
	After disinfecting hands, the disinfectant is not rinsed off.	Rinsing the disinfectant.	
	During disinfection, hands are held above elbow level.	Hands are below level of elbows during disinfection.*	
	During gowning, the hands are held above elbow level.	Hands are below level of elbows while gowning.*	
Sterile gowning	Outer surface of the gown is not touched by hand or clothes.	Contamination of the gown with the hand or clothes. *	



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*Appendix: Evaluation sheet (practical exam, Basic Surgical Skills)*

Assisted donning and removing of sterile gloves.	While gloving, hands touch only the inner surface of the glove. If already wearing sterile gloves (even on one hand), contact with non-sterile surfaces (such as other bare hand) is avoided.	Contamination of the glove (touching its sterile surface with bare hands while gloving).	
	During glove removal (e.g. after surgery), only its inner and not its outer surface is touched with bare hands.	Contact of bare hands with the stained/contaminated outer surface of the glove while removing the gloves.	

\* Correction: restart the affected phase from the beginning

**Evaluation of Task 3. Two-handed knotting**

**Knotting under tension** using two rubber bands of a knotting trainer set, using a square, surgeon's or Viennese knotting technique (optional)

Skill	Mistakes (1 mark deducted each)	Deduction
After the first half knot, the thread is passed to the other hand (on top for square and surgeon's knots and at the bottom in the case of the Viennese knotting technique)	The threads or hands are not crossed.	
Knotting with one hand is followed by knotting with the other hand (inserts two knots with alternating hands).	Knotting with the same hand (hands are not changed).	
The chosen knotting technique is performed correctly.	Incorrect knotting technique.	
Both threads are kept under tension during the knotting procedure.	The knot is loose and can be easily removed.	



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**Evaluation of Task 3. Donati stitches (mounting the needle holder, a minimum of 4–6 stitches are placed in a 5-cm long incision, knotting with instrument) (5 stiches + knots within 10 minutes)**

Skill	Mistakes (1 mark deducted each)	Deduction
Mounting the needle in the needle holder at a slightly obtuse angle at two-thirds of the length. The needle is mounted in the needle holder using the fingers.	Incorrect mounting of the needle holder with needle and thread.	
The needle holder is held in the dominant hand while the forceps are held in the assisting hand. The forceps is held like a pen, while the needle holder is held in the 1 <sup>st</sup> and 4 <sup>th</sup> fingers.	Holding and using the needle holder and/or the forceps incorrectly.	
The tissue is fixed with forceps during the stitching, the needle is passed through the tissue while following its curvature. Meanwhile, the integrity of the tissue and needle is preserved.	Damage to the tissue. Breaking the needle/straightening the needle.	
Donati stitches are inserted as requested.	Not capable of performing Donati stitches.	
Stitches are proportional (1 cm apart), perpendicular to the incision.	The distances between the stiches are not appropriate or not identical. The stitches are not perpendicular to the wound.	
The distance and depth of stitches from the edge is 1 cm and 0.3 cm, respectively.	The depth of the stitches and/or their distances from the incision site are not appropriate or not identical.	
The stitches are always applied in the same direction.	Because of the different stitching directions, the knots are not on the same side.	
It takes up to a maximum of 10 minutes to place 5 stitches and knots.	Running out of time, slow suturing/knotting.	
Knots performed properly with the needle holder. Knots are tight enough.	Not able to knot with needle holder. The knots (and thus the stitches) are too loose or tight.	

