



## DEPARTMENT OF BIOLOGICAL AND ENVIRONMENTAL SCIENCES

### **NBE3001 Experimental microsurgery, 3 credits**

Experimentell mikrokirurgu, 3 högskolepoäng

*Third-cycle level / Forskarnivå*

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#### **Confirmation**

This syllabus was confirmed by the Department of Biological and Environmental Sciences on 2019-06-11, and is valid from Autumn semester 2019.

#### ***Responsible Department***

Department of Biological and Environmental Sciences, Faculty of Science

#### ***Participating Departments***

Department of Biological and Environmental Sciences

#### **Entry requirements**

The participants have to be accepted as PhD students, work as a postdoc, a veterinarian or be experienced laboratory animal technicians or have a similar background education

#### **Learning outcomes**

The course consists of two parts, one week's lectures in the field of microsurgery combined with practical exercises with an overweight on the practical work and a literature study section corresponding to one week's work where the course participants deepen in any area within microsurgery

#### ***Knowledge and understanding***

- Recognize and use different types of surgical instruments
- Set up and work with the operation microscope
- Identify and compare different suture materials
- Identify and compare different catheter materials and their properties
- Plan pre- and postoperative care
- Distinguish between different vessels and tissue types

***Competence and skills***

- Know how to use different types of surgical instruments
- Understand and be able to use different types of surgical microscopes
- Establish and maintain appropriate anesthesia
- Demonstrate knowledge in various suture techniques
- Handle tissue
- Suture blood vessels (anastomoses)
- Cannula veins and arteries

***Judgement and approach***

- Compare different types of pre- and postoperative care
- Adopt an ethical approach to the management of experimental animals

**Course content**

The course contains the following elements

**Theory**

Anatomy (mouse and rat), anesthesia, analgesia, pre- and postoperative care, aseptic technique, surgical instruments, tissue management, catheter material and cannulation techniques, suture techniques.

**Practical part**

- General anatomy of the rat.
- Know how different types of catheters are made
- Organization of the workplace (microscope setting, instrument placement).
- Exposure and cannulation of the vena cava, exposure and cannulation of the carotid artery, exposure and exposure of vagus nerve.
- Suturing Techniques.

**Litterature review**

The course participants select an area within the microsurgery field and write a short literature review, the work should correspond to a weeks work.

**Types of instruction**

Examination: On practical skills for the learning outcomes of the following EU training modules:

EU 20. Anaesthesia for minor procedures – mice and rats.

EU 21. Advanced anaesthesia for surgical or prolonged procedures – mice and rats.

EU 22. Principles of surgery – mice and rats.

Theory: Not examined

Practice: The participant passed the examination of the practical part, with the following level of supervision

needed (as recommended in the above EC working document on LAS E&T):

*4 – Supervisor must be present when the procedure takes place providing direct supervision and advice.*

*3 – Supervisor must be aware when procedures are taking place and available for rapid intervention if required (i.e. in the vicinity of the procedure).*

*2 – Supervisor must be aware when procedures are taking place and available to attend to provide advice if required (i.e. in the vicinity of the establishment).*

*1 – Supervisor must be aware when procedures are taking place and available for discussion to provide advice if necessary (e.g. by telephone).*

*0 – No supervision required.*

### **Language of instruction**

The course is given in English.

If all participants understand and speak Swedish the course language is Swedish but the course material is in English

### **Grades**

The grade Pass (G) or Fail (U) is given in this course.

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*0 – No supervision required.*

### **Types of assessment**

The practical part is assessed by the three instructors. The literature review is marked and assessed by the course coordinator and the rest of the instructors

### **Course evaluation**

After the course completion a paper based course evaluation form is filled in by the participants. The results are sent out to all participants and course instructors

### **Other information**

Research animals are used (rats that are anesthetized by competent personnel)