



GÖTEBORGS UNIVERSITET

Experimental microsurgery, 1,5 or 3 hp

Course period: October 2014	Last day for application: 1 of September
Course leader / Address for applications: Michael Axelsson / michael.axelsson@gu.se	
Course description (Advertisement for Ph.D. students): <p>This course is a basic five day long course in experimental microsurgery with PhD student within the biomedical fields as a target group. There are no pre-requests for any previous surgery experience.</p> <p>The course has both theoretical and practical part as well as a literature study on a topic pertaining to experimental surgery and microsurgery.</p> <p>The theoretical lectures and practical parts of the course runs over five consecutive days and students that pass the examination, based on the practical skills, will get 1.5 ECTS points. The second part of the course is a short literature review that the students do at their own pace within 4 weeks after the practical part, the literature review is marked based on the layout and content and is students that pass will get another 1.5 ECTS (in total maximum of 3ECTS).</p> <p>The course will take place at Department of Biological and Environmental Sciences, Zoology Building.</p> <p>Theory and practical part <i>Topics that are covered:</i></p> <p><i>Theory:</i> ergonomy, adjustment of operative microscope and working anatomy (mouse and rat), anaesthesia, pre-, intra- and postoperative care, aseptic technique, surgical instruments,</p> <p><i>Practical part:</i> tissue handling and vascular dissection techniques, suturing techniques, catheters and catheterisation (vena cava, v. jugularis, carotid artery), exposure of vagus nerve, sampling and monitoring basic techniques for end-to-end anastomosis.</p> <p>We use a combination of non-living simulation models and anaesthetized rats and mice for the practical training.</p>	
Responsible department and other participation departments/organisations:	



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Department of Biological and environmental Sciences

Teachers:

Michael Axelsson, Professor, Dept. of Biological and Environmental Sciences, University of Gothenburg (Course leader and main contact)

Mihai Oltean, MD, PhD. The Transplant Institute. Sahlgrenska University Hospital, Gothenburg

Mats Hellström, Transplantation biology lab, Sahlgrenska academy, University of Gothenburg

Examiner: Michael Axelsson

Faculty of Science; Department of Biological Sciences

Experimental microsurgery, 1,5 or 3hp

Third cycle education

1. Confirmation

The syllabus was confirmed by the Head of the Department of Biological and Environmental Sciences, Ingela Dahllöf, 2014-02-26.

Disciplinary domain: Bioscience

Department in charge: Department of Biological and Environmental Sciences in collaboration with Laboratory for Transplantation and Regenerative Medicine, Sahlgrenska Academy, University of Gothenburg.

Main field of study: surgery

2. Position in the educational system

Elective course; third-cycle education. The course can also be given as a

3. Entry requirements

Admitted to third cycle education

Approved Laboratory animal Science course

4. Course content

The course consists of two parts, a week of lectures in the field of microsurgery combined with practical exercises, this part corresponds to 1,5 ECTS points and a literature part



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where students write a short literature review on a topic with relevance for their project, this part corresponds to 1.5 credit

The course consists of

Theory

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

Practical part

Review of the general anatomy of the rat, various types of catheters, organization of work space (setting the microscope, location of instruments), exposure and cannulation of the vena cava, exposure and cannulation of the carotid artery, exposure and dissection of the vagus nerve. Suturing Techniques. End-to-end anastomosis in the femoral artery of the rat. Aseptic techniques

Literature review

Course participants can choose to do a short literature review with a focus on micro-surgical techniques and their own project, this gives them an additional 1.5 credits

5. Outcomes

After completion of the course the Ph.D. student is expected to be able to

1. Knowledge and understanding

- Recognize and use different types of surgical instruments
- Set up and work with the operating microscope
- Identify and compare different suture materials
- Identify and compare different catheter materials and their properties
- Planning pre-, peri- and postoperative care
- Differentiating between different vessels and tissue types

2. Skills and abilities

- Use different types of surgical instruments
- Manage to use different types of surgical microscopes
- Establish and maintain appropriate anesthesia for various types of intervention
- Demonstrate knowledge of various suture techniques
- Manage tissue
- Cannulate veins and arteries

3. Judgement and approach

- Compare different types of pre-, peri- and postoperative care
- Take an ethical approach to the handling of laboratory animals

6. Required reading



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The reading list is supplied separate to the syllabus.

7. Assessment

The course is assessed on an individual basis as the students' practical ability and on the written assignment made by each student.

A Ph.D. student who has failed a test twice has the right to change examiners, if it is possible. A written application should be sent to the Department.”

In cases where a course has been discontinued or major changes have been made a Ph.D. should be guaranteed at least three examination occasions (including the ordinary examination occasion) during a time of at least one year from the last time the course was given.

8. Grading scale

The grading scale comprises Fail, (U), Pass (G)

9. Course Evaluation

The course evaluation is carried out together with the Ph.D. students at the end of the course, and is followed by an individual, anonymous survey. The results and possible changes in the course will be shared with the students who participated in the evaluation and to those who are beginning the course.

10. Language of instruction

The language of instruction is Swedish or English.

Live animals (rats and mice) are used during the course



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Literature for Experimental microsurgery, 1.5 or 3 ECTS

Mandatory literature

- Remie, R. (1990). Manual microsurgery on the laboratory rat. Elsevier Science. ISBN 0444811397

Referens litteratur

- Flecknell, P. A. (2009). Laboratory animals anesthesia , Elsevier Science, ISBN 9780123693761.
- Krinke, G.J. (2000). The laboratory rat (handbook of experimental animals) Academic Press. ISBN 012426400X.
- Hedrich, H. (2004). The laboratory mouse (Handbook of experimental animals). Academic Press. ISBN123364256.
- Waynforth, H.B., Flecknell, P.A. (1992). Experimental and surgical techniques in the rat. Academic Press. ISBN0127388516.