Stress and Animal Welfare

Programme course

7.5 credits

Stress och djurvälfärd

NBID70

Valid from: 2017 Spring semester

Determined by
Board of Studies for Chemistry, Biology and Biotechnology

Date determined
2017-01-25

Offered for the last time
Autumn semester 2024

Replaced by
NBID81

Main field of study
Biology

Course level
Second cycle

Advancement level
A1N

Course offered for
- Applied Ethology and Animal Biology, Master's Programme

Entry requirements
Note: Admission requirements for non-programme students usually also include admission requirements for the programme and threshold requirements for progression within the programme, or corresponding.

Prerequisites
A bachelor's degree with a major in the field of biology, including at least 5 ECTS credits in the field of physiology.

Intended learning outcomes

Stress consists of an evolutionary highly conserved suite of physiological and behavioural reactions to challenges experienced during the life-time of an individual. It can cause short-term as well as long-term effects on the biology of an individual, and may affect a wide range of biological traits. This ranges from cognitive performance to reproduction. Understanding the biology of stress is therefore essential for understanding animal welfare of animals in captivity. The student will be able to describe the mechanisms, function, phylogeny and ontogeny of the stress system, with a focus on its consequences on biology and behaviour of domesticated animals and other animals in captivity. The student will develop a proficiency in finding, evaluating and compiling primary and secondary research literature on relevant topics. The student will improve her/his skills in both written and oral communication of results of relevant scientific data through literature searches in both written and oral form. Furthermore, the student will develop critical assessment ability, allowing proper scientific judgement of scientific data on stress biology. The student will furthermore develop skills in the theory and practice of physiological methods related to stress biology. The student will be able to prepare, design, carry out, analyse and present scientific studies on stress measurement. The student will develop proficiency in formulating hypotheses and predictions and to design the recordings in accordance with those. The student will improve her/his skills in both written and oral communication of his/her results.

Course content

The course covers the following topics:

- History and context of the stress concept
- The hypothalamus-pituitary-adrenal axis and its regulation
- The sympathetic-adrenal axis and its regulation
- Consequences of stress in different life-perspectives
- Chronic and acute stress
- Individual differences in stress responses: coping patterns
- Genetics and epigenetics of stress
- Methods for stress measurement and assessment

Teaching and working methods

The course is composed of seminars, formal lectures and literature studies, and practical exercises. The lectures are intended to give an overview and structure to the different topics outlined below. The literature studies are intended to add depth and detail to the topics. A large part of the work will be carried out through independent self-studies, alone or in groups. The course also contains independent work in the form of practical lab work. If any extra costs arise due to travelling and living, these must be paid by the student.

Examination

HEM1	Home examination	2.5 credits	U, 3, 4, 5
LAB1	Laboratory work	2 credits	U, G
UPG1	Seminar participation and submissions of hand-ins	3 credits	U, G

Grades on the whole course is determined by the grade on HEM1.

Grades

Four-grade scale, LiU, U, 3, 4, 5

Department

Institutionen för fysik, kemi och biologi

Director of Studies or equivalent

Agneta Johansson

Examiner

Per Jensen

Education components

Preliminary scheduled hours: 120 h
Recommended self-study hours: 80 h

Course literature

Additional literature

Books

Barnard et al., *Asking questions in biology*
Moberg & Mench, *The Biology of Animal stress*

Articles

Selected review papers.

Common rules

Regulations (apply to LiU in its entirety)

The university is a government agency whose operations are regulated by legislation and ordinances, which include the Higher Education Act and the Higher Education Ordinance. In addition to legislation and ordinances, operations are subject to several policy documents. The Linköping University rule book collects currently valid decisions of a regulatory nature taken by the university board, the vice-chancellor and faculty/department boards.

LiU's rule book for education at first-cycle and second-cycle levels is available at http://styrdokument.liu.se/Regelsamling/Innehall/Utbildning_pa_grund-_och_avancerad_niva.