Title	Study Guide for Bachelor of Psychology B05, Biological Psychology, incl. Method 4 B05, Biological Psychology, incl. Method 4
Head of Module	Ulrich Kirk
Study Administration Coordinator	Education Secretary Charlotte Dickmeiss
Date	6/07/2018

Content

1. About the Study Guide

The purpose of this Study Guide

The Study Guide is your map to your education, i.e. it describes where you start (the qualifications you are expected to have), the route you take (teaching and assignments along the way), and what the goal is (what you must do to pass the test). The Study Guide also helps you find the right 'equipment' (recommends literature and other learning resources). Finally, it contains all the practical information you need.

Structure of the Study Guide

The Study Guide describes your activities on a weekly basis.

Information for each week

1. The week's lectures with a brief note on the subject, room, etc.
2. The week's class and/or group lessons, indicating whether extra material is available on e-learn.
3. Relevant literature
4. Homework for the individual activities

2. About the module

Head of Module

Ulrich Kirk, Department of Psychology,
E-mail: ukirk@health.sdu.dk - Phone: +45 6550 2695.

Study Administration Coordinator

Charlotte Dickmeiss,
E-mail: cdickmeiss@health.sdu.dk - Phone: +45 6550 3432.

Lecturers

In this module you will meet the following lecturers:

Ulrich Kirk. Head of Module Ph.D. Associate Professor. Department of Psychology, University of Southern Denmark
Lone Hørlyck. Ph.D. Post doc. Department of Psychology, University of Southern Denmark
Johannes Björkstrand. Ph.D. Post doc. Department of Psychology, University of Southern Denmark
Ole Jakob Storebø. Ph.D. Assistant lecturer. Department of Psychology, University of Southern Denmark
Anders Aaby Andersen. Ph.D. student. Department of Psychology, University of Southern Denmark

Other lecturers:

Cathrine Søndergaard Baastrup. Ph.D. Department of Clinical Biochemistry, Aarhus University Hospital.
Torben A. Kruse. Ph.D. Professor. Human Genetics, Odense University Hospital.
Henrik Bjarke Vægter. Ph.d. Post doc. Pain Center. Odense Universityhospital.
***Kasper Eskelund*.** Ph.D. Post doc. Veterancentrets Videnscenter. Svanemøllens Kaserne.

Classrooms

For an overview of the classrooms on Campus, go to
http://www1.sdu.dk/Kort/ULok/index.html
See Section 5 *Weekly lecture plan* for further information about classrooms/timetable and MitSkema https://mitsdu.sdu.dk/skema/activity/3210701,3209001/e18/e18

Duration of module

The module begins on Monday 27 August and finishes on Tuesday 16 October 2018.
The exam takes place in week 43 on the 24th of October

Prerequisites

The student must be able to independently use relevant scientific literature search systems and databases.

Purpose

In general, the subject deals with the biological and physiological basis of behaviour (including neurobiological processes) as well as basic theories and research of psychological function from a biological and physiological perspective and their individual differences. The module gives the students an understanding of how the study of biological processes can contribute to the development of theories on behaviour and other psychological concepts such as personality, perception, learning, memory, motivation and emotion, etc.

The module aims to give the students knowledge and understanding of the fundamental ideas, theories and research within biological psychology, so that the student meets its subject-specific and general objectives upon completion of the module.

As part of the module, the students must moreover acquire an understanding of basic quantitative research methodology and statistics.

The module's topics/content/learning objectives

- The history and development of biological psychology
- Basic theories, concepts and empirical evidence of biological psychology
- Current approaches and issues within biological psychology
- Reading, understanding and evaluating scientific literature in the field of biolog-

ical psychology
- A fundamental understanding and ability to use basic data-analytical concepts to solve statistical-related issues in the field of psychology.

3. Module objectives as defined in the curriculum

Subject-specific objectives

See Chapter 3, Section 9 of the curriculum, Programme Modules (PSY B05) for further details about the subject-specific objectives for this module.

General objectives

See Chapter 2, Section 6 of the curriculum, Competence Profile, for further details about the general objectives for the Bachelor's degree in Psychology.

4. Teaching activities and form of teaching

Form of teaching	Lessons
Lecture	55
Lecture (methodology)	3
Classroom lesson (methodology)	12
Other teaching activities, e-learning	11
Total	81

Lectures: The lectures will discuss key methods, concepts, theories and research methodology within biological psychology. It also includes guest lectures by a number of relevant academics. In the following description of the module, lessons regarded as methodology teaching are indicated with an (M) in brackets next to the heading.

Online practice tests and exams: Biological Psychology finishes with an MCQ exam (sub-test 2). Students train for the MCQ exam during the module by means of online tests. The teacher will be available virtually during the online practice test.

5. Weekly timetable

Module week 1 (week 35)

MONDAY 27 AUGUST 2018 FROM 10.15-13.00 IN U55
Introduction to biological psychology and the module by Ulrich Kirk

The lecture includes an introduction to B05: Biological Psychology. The lecture describes the structure of the model and the topics covered in the lecture series. In addition, it provides an introduction and comments to the textbooks for the module and other recommended literature, as well as the form of the exam. Finally, it introduces different investigative methods used within biological psychology.

Recommended literature:

Breedlove (2016), Chapter 1

WEDNESDAY 29 AUGUST 2018 from 10.15-13.00 in U45
The biological foundation for mindfulness interventions by Ulrich Kirk

This lecture provides an overview of the neurobiology behind mindfulness, including a presentation of the latest mindfulness research. Examples are provided of how the use of mindfulness treatments in conjunction with imaging techniques such as MRI and indicate possible applications of mindfulness as a clinical tool.

Recommended literature:
Philippot et al, (2009)
Kirk et al, (2016)
Farb et al, (2007)

FRIDAY 31 AUGUST 2018 FROM 10.15-13.00 IN U55
An introduction to functional magnetic resonance imaging (fMRI) and other scanning modalities by Johannes Björkstrand

The advent of the fMRI allows us to eavesdrop at neural activity in humans whilst engaged in complex cognitive tasks. From this we can learn valuable lessons of brain responses associated with perturbed brain function as in psychiatric disorders and in healthy brains. The lecture will cover the methods of fMRI and how it can be used to image neural activity including what the signal represents.

Recommended literature:
Breedlove (2016), Chapter 2
Amaro (2006)
Logothetis (2003)

Module week 2 (week 36)

TUESDAY 4 SEPTEMBER 2018 FROM 15.15-18.00 IN U140
Introduction to quantitative data analysis by Lone Hørlyck **(M)**

When data is available as a result of the gathering of psychological data (e.g. experiment, questionnaire survey or observation), it is often necessary to perform statistical data analysis that can throw light on research questions or hypotheses. This lecture provides an introduction to the use of statistical data analysis. In addition, the lecture provides the necessary background for the subsequent practical exercise lessons and an introduction to data analysis and SPSS.

Recommended literature:
Field (2013), Chapter 7, 9, 18

WEDNESDAY 5 SEPTEMBER 2018. Time and room, see below under "6. Timetable for classroom lessons" (M)
Exercise classes: Introduction to data analysis 1 by Anders Aaby Andersen

This class provides an introduction to the dataset used in the practice lessons, an introduction to the software SPSS as well as a brief discussion of different types of descriptive analyses. This forms the basis of a number of SPSS-based exercises giving the students experience with the use of SPSS and the calculation, reading and interpretation of descriptive analyses.

Recommended literature:
Pallant (2013), Chapter. 3, 4, 6, 8

FRIDAY 7 SEPTEMBER 2018 FROM 13.15-16.00 IN U140
The emotional networks of the brain by Johannes Björkstrand

This lecture will provide a basic introduction to the emotional circuits of the human brain. We will in this lecture present studies that has enlightens us about the importance of emotional prcesses in guiding human behaviour.

Recommended literature:
Breedlove (2016), Chapter 15
Dalgleish (2004)
Damasio (2013)
LeDoux (2000)
LeDoux (2014)

Additional literature:
Berridge (2013)

Module week 3 (week 37)

TUESDAY 11 SEPTEMBER 2018 from 14.15-17.00 in U1
Intro to EEG and Neurofeedback – applications to PTSD by Kasper Eskelund

This lecture provides a broad introduction to the EEG and the use of neurofeedback training to dmpen symptom in psychopathlogical illnesses such as PTSD.

Recommended literature:

WEDNESDAY 12 SEPTEMBER 2018 from 15.15-18.00 in U140
A presentation of the endocrine system by Lone Hørlyck

This lecture will give a general overview of the importance of the endocrine system for human development, brain function and behaviour. It provides an introduction to the communication pathways, physiology and functions of the main hormones, including how the hormonal system is regulated, and how hormones can affect social behaviour.

Recommended literature:
Breedlove (2016), Chapter 5

FRIDAY 14 SEPTEMBER 2018 from 10.15-13.00 in U140
An introduction to homoeostasis and behaviour by Lone Hørlyck

This lecture is an introduction to the regulation of behaviour, physiological functions and biological rhythms. We take a closer look at how sexual behaviour and differentiation are regulated biologically. The lecture moreover provides an overview of how the body regulates basic functions such as hunger, thirst, weight and temperature. Finally, the lecture covers sleep, including the physiological role of sleep and the regulation of circadian rhythms. This lecture builds on the previous lecture on the endocrine system to some extent.

Recommended literature:
Breedlove (2016), Chapter 12, 13, 14

Module week 4 (week 38)

TUESDAY 18 SEPTEMBER 2018 FROM 14.15-17.00 IN U140
Introduction to evolutionary psychology and development by Lone Hørlyck

This lecture provides a broad introduction to modern evolutionary psychology and the tools used to test evolutionary psychology hypotheses. Basic theory of evolution concepts such as natural and sexual selection, including fitness, will be presented.

Recommended literature:
Breedlove (2016), Chapter 6, 7

WEDNESDAY 19 SEPTEMBER 2018 FROM 14.15-17.00 IN U140
The brain's signalling systems by Cathrine Søndergaard Baastrup

The lecture provides a basic introduction to the brain's signalling systems and the most important neurotransmitter systems and the areas of the brain where they operate. It covers how neurons communicate via electrical signals that are converted to neurotransmitter substances. The processes in which signal substances are formed as well as the pre- and postsynaptic mechanisms are described.

Recommended literature:
Breedlove (2016), Chapter 3, 4

THURSDAY 20 SEPTEMBER 2018. Time and room, see below under "6. Timetable for classroom lessons" (M)
Exercise classes: Introduction to data analysis 2 by Anders Aaby Andersen

The lecture provides a brief introduction to correlation analysis and the Chi-square test. This introduction provides the background for a number of SPSS-based exercises giving the students experience with the calculation, reading and interpretation of correlation analysis and the Chi-square test.

Recommended literature:
Pallant (2013), Chapter. 11, 16

FRIDAY 21 SEPTEMBER 2018 FROM 9.15-12.00
Question time on Blackboard by Ulrich Kirk

In this e-activity, an open online forum for questions and discussion will be created. To the extent possible, the students are asked to upload their questions to the discussion forum on Blackboard prior to the e-activity.

FRIDAY 21 SEPTEMBER 2018 FROM 13.15-15.00 IN U140
Introduction to genetics by Torben Kruse

Recommended literature:
Pinel (2010), p. 35-49

Module week 5 (week 39)

E-teaching: MCQ exam test exercise by Ulrich Kirk:
During this week, the students train for the MCQ exam, which is voluntarily and can be accessed via Blackboard. Duration 5 hours.

TUESDAY 25 SEPTEMBER 2018 FROM 14.15-17.00 IN U140
Neuropsychiatry, mental illnesses and neuropharmacology by Cathrine Søndergaard Baastrup

The lecture describes the mechanism of action of psychopharmaceuticals. It describes how different types of psychopharmaceuticals, including antidepressants, mood-stabilising substances and antipsychotics affect the brain's signalling systems and thereby mental illnesses.

Recommended literature:
Breedlove (2016), Chapter 3, 4

WEDNESDAY 26 SEPTEMBER 2018 FROM 14.15-17.00 IN U140
Neurobiology and mental illnesses by Ulrich Kirk

This lecture discusses neurobiological factors in severe mental illnesses such as depression, bipolar affective disorder and schizophrenia. Using empirical studies as its starting point, the lecture will focus on how different factors such as neuroanatomical, neurofunctional and neurochemical deviations can contribute to the understanding of the symptoms and aetiology of these illnesses.

Recommended literature:
Breedlove (2016), Chapter 15, 16

THURSDAY 27 SEPTEMBER 2018. Time and room, see below under "6. Timetable for classroom lessons" (M)
Exercise classes: Introduction to data analysis 3 by Anders Aaby Andersen

A brief introduction is given to t-tests. This introduction provides the background for a number of SPSS-based exercises giving the students experience with the calculation, reading and interpretation of t-tests.

Recommended literature:

Pallant (2013), Chapter. 17

FRIDAY 28 SEPTEMBER 2018 FROM 10.15-13.00 IN U140
The brain's plasticity: development, organisation and reorganisation by Cathrine Søndergaard Baastrup

The lecture discusses the basic principles for the nervous system's neuroplastic processes as seen in the adult brain. This includes a discussion of examples of the changes seen in the adult brain during different forms of brain activities. A fundamental understanding of the functional reorganisation observed in patients with brain damage has only been developed in recent years.

Recommended literature:
Breedlove (2016), Chapter 17

Module week 6 (week 40)

TUESDAY 2 OCTOBER 2018 FROM 14.15-16.00 IN U140
Genetic research and psychology/psychiatry by Torben Kruse

Recommended literature:
Pinel (2010), p. 35-49

WEDNESDAY 3 OCTOBER 2018 FROM 14.15-17.00 IN U140
The brain's reward system – the implications for cognitive functions by Ulrich Kirk

The brain's dopamine system forms the basis of motivation, reward and learning. In this lecture we will take a closer look at the dopamine system as the basis for learning and motivation and also discuss higher cognitive functions such as attention.

Recommended literature:
Breedlove (2016), Chapter 18
Purves (2013)

THURSDAY 4 OCTOBER 2018. Time and room, see below under "6. Timetable for classroom lessons" (M)
Exercise classes: Introduction to data analysis 4 by Anders Aaby Andersen

This lesson sums up on the previous three classroom lessons in introduction to data analysis.

Recommended literature:
Pallant (2013) as directed.

FRIDAY 5 OCTOBER 2018 FROM 9.15-12.00 IN U140
Introduction to the pain system and the biological basis for the experience of pain and pain modulation by Henrik Bjarke Vægter

The lecture commences with a discussion of the basic physiology of the pain system and proceeds with a discussion of the experience of pain and physical health. The lecture will draw on the latest research within neuropsychology.

Recommended literature:
Breedlove (2016), Chapter 8

Module week 7 (week 41)

TUESDAY 9 OCTOBER 2018 FROM 14.15-17.00 IN U140
Medical treatment of ADHD (Attention-Deficit Hyperactivity Disorder) by Ole Jakob Storebø

This lecture will take a closer look at ADHD and how it is normally treated, with a particular focus on the effects of treatment with methylphenidate and the positive and negative effects of this medication.

Recommended literature:
Engert & Pruessner (2008)
Storebø et al., (2015)

WEDNESDAY 10 OCTOBER 2018 FROM 14.15-17.00 IN U140
Spatial navigation, episodic memory and PTSD by Lone Hørlyck

This lecture will commence with a brief introduction to the functions of the hippocampus, including how personal memories are coded in the brain and how we use the same system for spatial navigation. We will then look at how memory is affected by PTSD and how you can use this neuroscientific knowledge about the functions of the hippocampus to better understand memory symptoms in PTSD. We will also look at how this knowledge might contribute to the development of new forms of psychological intervention targeting these symptoms.

Recommended literature:
Breedlove (2016), Chapter 17

FRIDAY 12 OCTOBER 2018 FROM 10.15-13.00 IN U140
Question time + module evaluation by Ulrich Kirk

Module week 8 (week 42)

TUESDAY 16 OCTOBER 2018 FROM 9.15-12.00
Question time on Blackboard by Ulrich Kirk

In this e-activity, an open online forum for questions and discussion will be created on Blackboard. This e-activity is mainly in regards to address (lastminute) questions regarding the upcoming MCQ exam.

6. Timetable for classroom lessons

See class lists on Blackboard (published during the week commencing 27 August)

EXERCISE CLASS DATA ANALYSIS
Class 1: 5 September from 9.15-12.00, room WP 19.04*, 20 September from 9.15-12.00, room U56, 27 September from 13.15-16.00, room U56, 4 October from 13.15-16.00, room U56.

Class 2: 5 September from 13.15-16.00, room WP 19.04*, 20 September from 13.15-16.00, room U56, 27 September from 9.15-12.00, room U56, 4 October from 9.15-12.00, room U56.

*Note teaching on this date will take place at J.B. Winsløws Vej 19/WinsløwParken:
Link1:http://vejviser.sdu.dk/vejviser/servlet/Main?level=2&map=i292
Link2:https://clients.mapsindoors.com/sdu/573f26e4bc1f571b08094312/details/5683d751423b7d1380c0dd2b/

7. The exam

Form of exam:
The students must sit two exams/sub-tests, which must be passed individually.

Sub-test 1:
Active participation (80%) in methodology teaching. In the description of the module, lessons regarded as methodology teaching are indicated with an (M) in brackets next to the heading.
Assessment: Internal test pass/fail (5 ECTS)

Sub-test 2:
Written multiple choice questionnaire (MCQ) without aids (100 questions)
Assessment: Assessed according to the 7-mark scale (10 ECTS)

Exam date (sub-test 2):
Wednesday 24 October 2018, duration 2 hours

Examiner:
Sub-test 1: Internal, pass/fail
Sub-test 2: Internal, 7-mark scale

BEFORE THE EXAM
You must bring your student card to the exam. Mobile phones and other electronic devices must be switched off and handed over to the invigilators before the exam. You must arrive outside the exam room at least 30 minutes before the start of the exam, unless otherwise indicated.

ASSESSMENT
Since 1 September 2007, the exam has been assessed according to the 7-mark scale.
An extract of the Executive Order on Marking Scale and other Assessments is available at:
https://www.retsinformation.dk/Forms/R0710.aspx?id=29307

8. Re-examination

The time of the re-examination will be announced later.

Form of exam (sub-test 1):
The written exam consists of a statistical data analysis exam question paper with aids permitted. Aids permitted: Pallant, J. (2013). SPSS Survival Manual. Duration: 1 hour.

Form of exam (sub-test 2):
Written short answer essay without aids. Duration: 3 hours.

9. Literature

NOTE: Pay attention to the copyright rules. They are available on Blackboard under General Info, Psychology SDU Information to everyone: https://e-learn.sdu.dk/bbcswebdav/pid-4317726-dt-content-rid-6104988_3/orgs/faglig_vejleder_Psykologi/Ophavsret-A4-DANSK_002.pdf

Recommended literature (books/chapters in books):

- Breedlove MS & Watson NV (2017). *Behavioral Neuroscience* (8th edition). Sinauer Associates, Inc. Publishers. Chapters 1-8, 12-18 (504 pages).
- Field A (2013). *Discovering statistics using IBM SPSS statistics*. (4th edition). London: Sage. Chapters 7, 9, 18 (105 pages).
- Pallant, J. (2013). SPSS Survival Manual. (5th edition). Maidenhead, UK: Open University Press. Chapters 3 + 4 + 6 + 8 + 11 + 16 + 17. (103 pages).
- Pinel, J.P.J. (2010). *Biopsychology* (8th edition). Pearson. Pages 35-49 (15 pages).
  (available on Blackboard in PDF format)
- Purves D, Cabeza R, Huettel SA, LaBar KS, Platt ML, Woldorff MG (2013). *Principles of Cognitive Neuroscience.* Sinauer. 2nd Edition. Chapter 14 (40 pages).

Recommended literature (research articles):

- Engert V & Pruessner JC (2008). Dopaminergic and noradrenergic contributions to functionality in ADHD: The role of methylphenidate. Current Neuropharmacology 6:322-328 (5 pages).
- Storebø OJ, Krogh HB, Ramstad E, Moreira-Maia CR, Holmskov M, Skoog M, et al. (2015) Methylphenidate for attention-deficit/hyperactivity disorder in children and adolescents: Cochrane systematic review with meta-analyses and trial sequential analyses of randomised clinical trials. BMJ 2015;351:h5203 (14 pages).
- Philippot P & Segal Z (2009). Mindfulness based psychological interventions. J Consciousness Studies 16:10-12:285-306 (22 pages).
- Farb NA, Segal ZV, Mayberg H, Bean J, McKeon D, Fatima Z, Anderson AK. (2007) Attending to the present: mindfulness meditation reveals distinct neural modes of self-reference. Soc Cogn Affect Neurosci. Dec;2(4):313-22 (10 pages).
- Kirk U, Gu X, Sharp C, Hula A, Fonagy P, Montague PR. (2016) Mindfulness training increases cooperative decision making in economic exchanges: Evidence from fMRI. Neuroimage. Sep;138:274-283 (10 pages).
- Dalgleish T. (2004) The emotional brain. Nat Rev Neurosci. Jul;5(7):583-9 (7 pages).
- Damasio A, Carvalho GB. (2013) The nature of feelings: evolutionary and neurobiological origins. Nat Rev Neurosci. Feb;14(2):143-52 (10 pages).

- LeDoux JE. (2000) Emotion circuits in the brain. Annu Rev Neurosci. 23:155-84 (31 pages).
- LeDoux JE. (2014) Coming to terms with fear. Proc Natl Acad Sci U S A. Feb 25;111(8):2871-8 (8 pages).
- Amaro E Jr, Barker GJ. (2006) Study design in fMRI: basic principles. Brain Cogn. Apr;60(3):220-32 (13 pages).
- Logothetis NK. (2003) The underpinnings of the BOLD functional magnetic resonance imaging signal. J Neurosci. May 15;23(10):3963-71 (9 pages).

Additional literature:

- Berridge KC, Kringelbach ML. (2015) Pleasure systems in the brain. Neuron. May 6;86(3):646-64 (39 pages).

Total number of pages of recommended literature (books/chapters in books): 767
Total number of pages of recommended literature (research articles x 2): 278
Total number of pages: 1045

10. Module evaluation

All modules in the Bachelor's degree programme are evaluated on an ongoing basis. The evaluation is anonymous and not compulsory, but we ask all students to participate in this work. The purpose of the evaluation is to improve the quality of the programme, which will be adjusted regularly on the basis of the evaluations, among other things.

Appendix 1 Special information about the purchase of books

Textbooks and supplemental academic literature can be purchased at:

Studenterboghandelen
Campusvej 55
Campustorvet (at the main entrance)
DK-5230 Odense M
Tel.: +45 6550 1700

E-mail: *studenter@boghandel.sdu.dk*
Website: *http://www.boghandel.sdu.dk*

Opening hours: Monday - Thursday from 9.30 - 17.15
Friday from 9.30 - 15.00