

## Module Description for Advanced Biopsychology

<b>Module Code</b>	PSU34620
<b>Module Name</b>	ADVANCED BIOPSYCHOLOGY
<b>ECTS credit weighting</b>	5 ECTS
<b>Semester taught</b>	Semester 2
<b>Module Coordinator/s</b>	Dr Alan O' Dowd, Professor Fiona Newell
<b>Module Learning Outcomes with embedded Graduate Attributes</b>	<p><b>On successful completion of this module, students should be able to:</b></p> <p><b>LO1.</b> Demonstrate a broad understanding of how the brain gives rise to behaviour [TI, DC]</p> <p><b>LO2.</b> Demonstrate understanding of important concepts, perspectives, and empirical findings linking brain and behaviour [TI, DC]</p> <p><b>LO3.</b> Explain the neuroanatomy and development of human brain structures across the lifespan [CE, DC]</p> <p><b>LO4.</b> Outline the steps involved in neural signalling including neurochemistry, hormones and effect of drugs on the brain [TI, DC, CE]</p> <p><b>LO5.</b> Demonstrate understanding of sensation, action, motivated behaviour, and cognition - within the context of neuroscience and behaviour [TI, DC]</p> <p><b>LO6.</b> Use research to evaluate recent evidence linking bodily functions (including the microbiome) to brain and behaviour [TI, DC]</p> <p><b>LO7.</b> Demonstrate understanding of the biological basis of regulatory behaviour [CE, DC].</p> <p><b>LO8.</b> Report on observations of biorhythms and implement knowledge to provide theoretical insights into behaviour [TI, CE].</p> <p><b>LO9.</b> Evaluate role of physiological basis of brain disorders and trauma on behaviour [TI, DC, AR].</p>
<b>Module Content</b>	<p>Biopsychology is the study of the biological basis of behaviour. In this course, students discover connections among psychology and biology, neuroscience, pharmacology, and endocrinology. Lectures cover the structure, function, and development of the human nervous system and how this system can give rise to basic sensory, motor, cognitive, and regulatory processes that characterize human behaviour. The content will also include discussions on the role of hormones and microbiome on brain function and behaviour. This course will refer to examples of the effects of brain damage and nervous system disorders to provide insight into how pathological thoughts and behaviours are rooted in physiological causes. Additionally, students develop a basic understanding of the methods used in</p>

biopsychology and evaluate the contributions as well as limitations of these approaches.

Students can expect the following content across the lectures in this module:

1. Neuroanatomy and neurophysiological processes in the brain
2. Neurotransmitters and drugs
3. The evolution of the brain and behaviour
4. Brain development and plasticity
5. Hormones and the brain
6. Homeostasis: brain mechanisms and regulatory behaviour
7. Biological rhythms and sleep
8. Principles of sensory processing in the brain
9. Brain basis of major sensory systems and their interactions
10. The influence of body on brain function and cognition
11. Psychopathology and mental disorders

### **Teaching and Learning Methods<sup>1</sup>**

This course is a lecture/discussion course, with in-class activities. Readings from a recommended textbook are assigned to provide students with an overview of the topic. In addition, primary source literature will be provided, the reading of which is designed to support depth of understanding on specific topics. Lectures provide context, focus on topics of interest in-depth, discuss topics not included in the readings, and provide additional detail and explanations, including demonstrations and videos. Students will benefit most by following along with the course and asking questions during lecture or offline. There will be time specifically set aside for discussions.

Across lectures, students will be taught to analyse complex systems, recognise and understand relationships, critically evaluate methods and theories, reflect on their own experiences and address problems, within the area of biopsychology. This aligns with ESD themes and competencies of systems thinking, critical thinking, self-awareness and integrated problem-solving.

The course assessment consists of quizzes, coursework and an exam. Lectures provide students with foundational knowledge and introduce key concepts and theories. Discussions encourage critical engagement and reflection in a collaborative environment. Provided readings, video materials, quizzes and the assignment allow students to reinforce and apply their understanding during the course, supporting deeper engagement with course content.

These strategies accommodate diverse learning styles and promote both active and independent learning. The strategies support the development of knowledge, critical thinking, analytical skills, and conceptual understanding required to meet LOs. The combination of structured contact hours and guided independent study prepares

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<sup>1</sup> [Trinity-INC](#) provides tips and resources on how to make your curriculum more inclusive.

students for the course final exam which requires comprehension, synthesis, and application of course material across the semester.

### Assessment Details<sup>2</sup>

Please include the following:

- Assessment Component
- Assessment description
- Learning Outcome(s) addressed
- % of total

It is recommended that module co-ordinators consider assessment types used across the year to ensure varied assessment methods.

Assessment Component	Assessment Description	LO Addressed	% of total
Quiz	Four short quizzes (mcq) will be administered during the course (2.5% each). Each quiz will be timed and open-book.	LO1-5	10%
Coursework	A single homework assignment based on circadian rhythms.	LO1, 2, 5	15%
Exam	Knowledge of the content of the course, including conceptual and theoretical approaches, will be assessed by an in-person, written (closed-book) exam. This exam will be taken during exam week.	LO1-5	75%

*Please describe both formative and summative assessment components, noting how the assessment(s) enable learning and enable demonstration of the achievement of the learning outcomes. Please include % weighting of summative assessment components, which should be carefully balanced between groupwork and individual components.*

<sup>2</sup> <https://www.tcd.ie/academicpractice/resources/assessment/>

*Each Assessment component should be clearly aligned to the learning outcomes. Please outline each assessment component, and the assigned LO(s) in the table below.*

Academic integrity will be supported through clear communication of expectations regarding appropriate academic conduct, including the responsible and ethical use of generative AI tools. Students will be informed about institutional policies on plagiarism, collusion, and AI-assisted work at the beginning of the course and reminded of these expectations throughout the semester. The assessment consists of a series of timed quizzes to be administered during the course, a take-home assessment and a final, in-person examination. These are collectively designed to assess independent knowledge acquisition, critical thinking, and the ability to synthesise material.

**Contact Hours and Indicative Student Workload<sup>3</sup>**

*Consider how much time an average student needs to invest in the elective to demonstrate the learning outcomes at threshold level. Take into account attendance and time for preparation, including self-study, for all teaching, learning and assessment associated with the module. Workload should be commensurate with ECTS size, which is equivalent to 100-125 student learning hours.*

<b>Contact hours: 11</b>
<b>Independent Study (preparation for course and review of materials): 22</b>
<b>Independent Study (preparation for assessment, incl. completion of assessment): 80</b>

**Inclusive Curriculum**

*All modules should be inclusive for all students who learn differently. Please respond to the following questions (i.e. ensuring the course supports engagement and representation of all students)*

	<b>PLEASE TICK</b>
1. Have you reviewed the teaching / assessment methods and materials for possible barriers to learning, e.g. students with English as a second language, disabilities, significant external responsibilities, students with IT issues / requiring specific accessibility software etc.?	<input checked="" type="checkbox"/>
2. Have you adapted your resources and teaching materials taking into account Trinity's Accessible Information Guidelines ( <a href="https://www.tcd.ie/disability/teaching-info/TIC/materials.php">https://www.tcd.ie/disability/teaching-info/TIC/materials.php</a> )?	<input checked="" type="checkbox"/>

<sup>3</sup> [https://www.tcd.ie/academicpractice/resources/assessment\\_workload/](https://www.tcd.ie/academicpractice/resources/assessment_workload/)

<p>3. Does the content of your module address diversity? For example, including a diverse demographic profile of authors, diversity of ideas and perspectives, or representation (e.g. pictures of conditions on different skin tones), or by acknowledgement of the homogenous context of the discipline/topic?</p>	<input checked="" type="checkbox"/>
<p>4. Highlight at least two ways which your course/module incorporates principles of inclusivity and accessibility into the curriculum design</p> <p><i>(i.e. supports engagement and representation of <b>all</b> Trinity students, presents information and content in a variety of ways, and offers variety and options of assessment type. See: <a href="#">Universal Design for Learning - AHEAD for more information and guidance</a>, and <a href="#">Inclusive Curriculum - Equality - Trinity College Dublin (tcd.ie)</a> for insights from Trinity students)</i></p>	

**Indicative Reading List (approx. 4-5 titles)**

Core text-book: Behavioural Neuroscience (10th edition) by Breedlove & Watson, 2023, Sinauer (Oxford University Press), (ISBN: 9780197616857)

ebook via VitalSource (9th edition):  
<https://www.vitalsource.com/ie/products/behavioural-neuroscience-s-marc-breedlove-neil-v-v9780197624784>

Other primary source materials (e.g. review articles) will be announced in class and will be available as pdfs on the course website. Other materials such as videos or demos will be made available on Blackboard for each week.

Links for further (optional) readings may also be provided on lecture slides.

**Module Pre-requisite**

Cognate foundation module in Perception or Sensory Neuroscience

**Module Co-requisite**

None

**Are other Schools/Departments involved in the delivery of this module? If yes, please provide details.**

No