

## Liverpool John Moores University

Title: Somatosensory Systems  
Status: Definitive  
Code: **7100BRAIN** (126655)  
Version Start Date: 01-08-2021

Owning School/Faculty: Psychology  
Teaching School/Faculty: Psychology

Team	Leader
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**Academic Level:** FHEQ7      **Credit Value:** 20      **Total Delivered Hours:** 45  
**Total Learning Hours:** 200      **Private Study:** 155

### Delivery Options

Course typically offered: Semester 1

Component	Contact Hours
Lecture	20
Practical	15
Seminar	8

**Grading Basis:** 50 %

### Assessment Details

Category	Short Description	Description	Weighting (%)	Exam Duration
Presentation	PRES	The student will be required to critically review a research paper previously discussed in a seminar - 20 minutes (15 talk + 5 questions)	40	
Exam	EXAM	1 hour for seen question, 1 hour for short answer questions	60	2

### Aims

*To provide a comprehensive understanding of the mammalian somatosensory system, from sensory transduction through to central representation in the brain and behaviours - in sickness and health.*

## **Learning Outcomes**

After completing the module the student should be able to:

- 1 Demonstrate an in-depth understanding of the basic functional anatomy of somatosensory systems, in animals and human primates.
- 2 Identify and communicate the array of research tools and techniques used in the study of the somatosensory system and what knowledge each method provides.
- 3 Critically assess the physiological, behavioural and clinical consequences of damage to or stimulation of components of the system e.g neuropathic pain.

## **Learning Outcomes of Assessments**

The assessment item list is assessed via the learning outcomes listed:

PRESENTATION	1	3	2
EXAM	1	3	2

## **Outline Syllabus**

*This module explores the complexity and heterogeneity of the somatosensory system with a recognition of its multisensory properties and importantly of its discriminative and affective properties. The course will rely on a comparative approach to emphasise species-typical developments in this system, from C. elegans to primates. Research in somatosensation generally focuses on discriminative touch, and more specifically low threshold mechanoreceptors innervated by fast conducting myelinated nerve fibres, but although this will be covered there will be more emphasis on emerging insights into the role of unmyelinated c-fibres in affective states - itch, pain and cutting-edge research into tactile pleasure. This will require an understanding of the ionic basis of electrical signalling, action potential generation, neurotransmitter function and neuroanatomy. With the inputs stage covered the impact of c-fibres on two affective states will be covered - pain and pleasure. Here students will learn about how to measure such states from psychophysics to neuroimaging, and the role of key neurotransmitters such as serotonin, opioids and hormones e.g. oxytocin.*

## **Learning Activities**

A basic objective is for students to further develop their critical thinking capabilities based on a more evidence based knowledge of the topic. Students will be encouraged to read widely and to identify and incorporate learning from the other modules in this MSc in order to avoid any compartmentalised learning.

Lectures will provide basic knowledge but follow-up, student led, seminars, will dig deeper and challenge students to test their knowledge by reviewing and critically appraising peer reviewed papers. These seminar discussions will give students the opportunity to improve their verbal communication skills.

A broad range of practicals will be used to develop students technical skills in data collection and analysis:

These will include Psychophysical, Electrophysiological and Behavioural studies in invertebrates and humans and running ELISAS to conduct endocrine analysis

## **Notes**

This is one of two strongly comparative modules that will show continuity between species and emphasise the value of multidisciplinary systems based approach to the study of brain and behaviour. The tools and techniques introduced here, along with the training in neuroanatomy provided in the Current Methods in Brain and Behaviour Module, will ensure a strong foundation for the other comparative module, Neuroendocrinology, delivered in semester 2.