LF313-15 System Interactions in Human Disease

26/27

Department
Life Sciences
Level
Undergraduate Level 3
Module leader
Robert Huckstepp
Credit value
15
Module duration
10 weeks
Assessment
Multiple
Study location
University of Warwick main campus, Coventry

Description

Introductory description

The new module will primarily combine neuroscience with anatomy and physiology, though it will also include aspects of immunology, microbiology, cell biology, and genetics. It will bring together knowledge from several pathways into a single view of the human body as a functioning system. The focus is on human-based medical science, and should be largely popular with the student body.

Module aims

To provide research-led teaching that allows students a greater insight into how sometimes seemingly disparate lines of research can intersect. The diagnostic workshop also provides the students with a unique experience that provides them with a novel way to approach looking at the human body.

Outline syllabus

This is an indicative module outline only to give an indication of the sort of topics that may be

covered. Actual sessions held may differ.

Lectures

Gut-brain axis

1. Anxiety and depression
2. Eating disorders
3. How eating disorders affect the microbiome/nutrition
4. How the microbiome/nutrition affects anxiety and depression

Organ systems
5) The liver and the brain
6) The pancreas and the brain
7) The immune system and the brain

Cognition
8) Cardiovascular influences on dementia
9) Cognition in dementia
10) Dementia

Sleep
11) Sleep and sleep deprivation
12) Insomnia and mood disorders

Sleep apnoea and the body
13) Sleep apnoea
14) Inflammation during sleep
15) Neurodegeneration and sleep apnoea
16) Comorbidities of Sleep Apnoea

Supplemental Workshop 1 (50%: 2 hours + analytical assessment)
The students will be given information on how to perform critical analysis using tools such as metanalyses and systematic reviews. The session will cover things such as what is a P-value, why single studies are flawed, types of error, appropriate powering of experiments, how to critically assess contrasting findings by dissecting the methodology. It will also include interactive components such as boolean searching, filtering results, unbiased searching, and using specialist software. The students will have to perform metanalysis including a critical analysis of the literature in the form of a report with a word limit of ~2000 words.

Supplemental workshop 2 (2 hours)
An in module assessment where students can come and ask questions about Boolean searches, metanalyses, and the essay/report.

Supplemental Workshop 3 (2 hours + assessment)
Clinical presentations, working in groups, the students will diagnose patients. The students will be given a case study, where limited information is released in 5 stages. After the release of information the group has time to discuss and research the patient's symptoms. Students must log their diagnosis after each round with a rationale as to why they believe the information would lead to the underlying condition. IN addition to being assessed, this acts as a fun and engaging revision session.

Reassessment (100%)
The exam will consist of 4 questions. Students must answer 2 questions.

Please note that lecturers use laser pointers during the lectures and that these will not show up in the lecture capture. Therefore, whilst attendance is not mandatory, it will help with learning outcomes.

Learning outcomes

By the end of the module, students should be able to:

- A theoretical knowledge of neurobiology
- Consolidation of knowledge from physiology and neuroscience
- Understand current diagnostic techniques
- A comprehensive overview of complex human biology
- A theoretical knowledge of neurobiology
- Written communication skills
- Oral communication skills
- Use of scientific databases
- Ability in critical analysis
- Ability to formulate and test hypotheses
- Team working skills
- Critical analysis

Interdisciplinary

Brings together a holistic overview of how different systems within the human body interact with one another.

Subject specific skills

Reading of contemporary neuroscience, physiology, anatomy, microbiology, immunology, and cell biology. Synthesis of ideas into a cohesive and comprehensive overview of the human body, and applied medical sciences. Completion of a diagnostics workshop.

Transferable skills

Using logic to work through problems in real time
Written communication
Oral communication
Team work
Formulating complex hypotheses
Critical analysis

Study

Teaching split

Provider	Weighting
Life Sciences	95%
Warwick Medical School	5%

Study time

Type	Required
Lectures	16 sessions of 1 hour (11%)
Other activity	6 hours (4%)
Private study	106 hours (71%)
Assessment	22 hours (15%)
Total	150 hours

Private study description

Preparation for the workshop and associated analytical assessment

Other activity description

Supplemental Workshop 1 (2 hours)
The students will be given information on how to perform critical analysis using tools such as metanalyses and systematic reviews. The session will cover things such as what is a P-value, why are single studies flawed, types of error, appropriate powering of experiments, how to critically assess contrasting findings by dissecting the methodology. It will also include interactive components such as boolean searching, filtering results, unbiased searching, using specialist software. The students will have to perform metanalysis including a critical analysis of the literature in the form of a report with a word limit of ~2000 words.

Supplemental workshop 2 (2 hours)
An in module assessment where students can come and ask questions about Boolean searches, metanalyses, and the essay/report.

Supplemental Workshop 3 (2 hours)
Clinical presentations, working in groups the students will diagnose patients. The students will be given limited information, each group must ask questions to gain further patient information, which they will require to figure out the underlying condition. This acts as a fun and engaging revision session.

Costs

No further costs have been identified for this module.

Assessment

You do not need to pass all assessment components to pass the module.

Students can register for this module without taking any assessment.

Assessment group A4

	Weighting	Study time	Eligible for self-certification
Metanalysis/systemic review	50%	20 hours	No
Following supplemental Workshop 1, the students will chose a topic from the course and will perform a critical analysis of the literature in a report with a word limit of 2000 words.			
Open-book assessment	50%	2 hours	No
Students will be assessed on the diagnostic workshop			

Assessment group R3

	Weighting	Study time	Eligible for self-certification
Open-book assessment	100%		No
The assessment will consist of 4 questions. Students must answer 2 question			

Feedback on assessment

Individual feedback will be provided

Availability

Courses

This module is Optional for:

- Year 3 of UBSA-C1B9 Undergraduate Biomedical Science
- ULFA-C1A3 Undergraduate Biomedical Science (MBio)
    - Year 3 of C1A3 Biomedical Sciences
    - Year 3 of C1B9 Biomedical Sciences
- Year 3 of ULFA-C1A7 Undergraduate Biomedical Science with Industrial Placement (MBio)
- Year 4 of ULFA-CB18 Undergraduate Biomedical Science with Placement Year
- Year 3 of ULFA-B140 Undergraduate Neuroscience (BSc)
- Year 3 of ULFA-B142 Undergraduate Neuroscience (MBio)
- Year 3 of ULFA-B143 Undergraduate Neuroscience (with Industrial Placement) (MBio)

- Year 4 of ULFA-B141 Undergraduate Neuroscience (with Placement Year) (BSc)