

Module Specification

Developmental and Stem Cell Science

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Part 1: Information

Module title: Developmental and Stem Cell Science

Module code: USSJXY-15-3

Level: Level 6

For implementation from: 2021-22

UWE credit rating: 15

ECTS credit rating: 7.5

Faculty: Faculty of Health & Applied Sciences

Department: HAS Dept of Applied Sciences

Partner institutions: None

Delivery locations: Frenchay Campus

Field: Applied Sciences

Module type: Standard

Pre-requisites: Human Health and Disease 2021-22, Studies in the Biology of Disease 2021-22

Excluded combinations: None

Co-requisites: None

Continuing professional development: No

Professional, statutory or regulatory body requirements: None

Part 2: Description

Overview: Pre-requisites: Students must take one out of Studies in the Biology of Disease (USSKAT-30-2) or Human Health and Disease (USSKAN-30-2).

Features: Not applicable

Educational aims: This module is designed to give an overview of two key interconnected subject areas at the forefront of current research. This will complement and extend other modules on the programmes – briefly:

- 1. Fundamental and applied developmental biology.
- 2. Applied stem cell science.

Outline syllabus:

1. Fundamental and applied developmental biology:

The mechanisms of embryological development will be introduced from the point of fertilisation and embryogenesis, through embryological and foetal development. This will include aspects of molecular mechanisms of signalling and patterning within the embryo. Organogenesis will also be examined to allow an understanding of congenital organ defects (such as those affecting the heart) and subsequent effects on health. The role of developmental signalling mechanisms in both inherited and sporadic disease, such as cancer, will be covered from a research-informed perspective.

2. Applied stem cell science:

From basic biology to clinical application. The legislation and ethics around human embryo and stem cell science will be considered. The nature, identification, pathology and clinical application of stem cells will be explored in various tissue systems, including current and potential stem cell therapy. The cancer stem cell theory will be addressed using worked examples along with the potential for the development of targeted therapies.

Part 3: Teaching and learning methods

Teaching and learning methods: Scheduled Learning: The Module delivery will include 42 hours of contact time, split between lectures, tutorials and research seminars.

The majority of the taught material will be delivered as lectures. Tutorials will include opportunities for students to debate ethical issues around human embryo and stem cells in terms of both research and clinical application. Staff will also deliver research seminar sessions based around their own developmental and/or stem cell-based research.

Independent Learning: In addition, students are expected to prepare for tutorial sessions by carrying out designated reading tasks. Furthermore, they are expected to undertake further independent reading – with guidance given during lectures. This reading is designed to support student learning both for the completion of coursework, but also in preparation for the final exam, to ensure both the breadth and depth of their knowledge.

Module Learning outcomes:

MO1 Demonstrate an understanding of the fundamental molecular biology of human embryogenesis and development, and developmental disease.

MO2 Demonstrate an understanding of the applications of developmental, embryological and stem cell technologies.

MO3 Demonstrate an awareness and understanding of recent advances in the field of development and stem cell technologies, and critically review literature in the field.

MO4 Demonstrate a consideration of the ethical, social and political implications of advances in development and stem cell technologies.

Hours to be allocated: 150

Contact hours:

Independent study/self-guided study = 114 hours

Face-to-face learning = 36 hours

Total = 150

Reading list: The reading list for this module can be accessed at readinglists.uwe.ac.uk via the following link <u>https://uwe.rl.talis.com/index.html</u>

Part 4: Assessment

Assessment strategy: Component A: will consist of an online examination comprising of essay type questions. A choice of 3 out 6 six questions will allow students to demonstrate both the breadth and depth of their knowledge of the subject area.

Component B: The coursework element of the module will consist of a 2000 word essay based on a topical issue in applied embryological and stem cell research and potential clinical application. Students will consider the underlying cellular and molecular biology of the topic, recent advances in methods and technologies for studying these areas, alongside the ethical and political issues and changing legislation.

Component A assesses knowledge and understanding of fundamental concepts underlying embryogenesis, development, stem cells biology and application.

Component B tests the application of knowledge, critical evaluation and the ability to research and review relevant literature. It requires the student to consider scientific principles in the wider context of society, politics and ethics. Component B also tests the students' broad and up-to-date knowledge of the field, which is necessary in a rapidly advancing area such as this.

Feedback from the coursework assessment will feed forward in preparing students for the final examination.

Assessment components:

Examination - Component A (First Sit) Description: Written Exam (online - 24 hour window) Weighting: 50 % Final assessment: Yes Group work: No Learning outcomes tested: MO1, MO2, MO3

Written Assignment - Component B (First Sit)

Description: Essay (1500 words) Weighting: 50 % Final assessment: No Group work: No Learning outcomes tested: MO1, MO2, MO3, MO4

Examination - Component A (Resit)

Description: Written Exam (online - 24 hour window) Weighting: 50 % Final assessment: Yes Group work: No Learning outcomes tested: MO1, MO2, MO3

Written Assignment - Component B (Resit)

Description: Essay (1500 words) Weighting: 50 % Final assessment: No Group work: No Learning outcomes tested: MO1, MO2, MO3, MO4

Part 5: Contributes towards

This module contributes towards the following programmes of study: Applied Biomedical Science {Top-Up}[Sep][FT][INTUNI][1yr] BSc (Hons) 2019-20 Applied Biomedical Science [Sep][FT][Frenchay][3yrs] BSc (Hons) 2019-20