

# LF266-15 Blood and Circulation for Neuroscience

**24/25**

**Department**

Life Sciences

**Level**

Undergraduate Level 2

**Module leader**

Mark Wall

**Credit value**

15

**Module duration**

5 weeks

**Assessment**

Multiple

**Study location**

University of Warwick main campus, Coventry

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## Description

### Introductory description

The overall aim of the module is to describe the haematological system (blood and the tissues and organs associated with it) and the cardiovascular system (CVS) in an integrated manner in order to give students a good understanding of the physiology, in health and disease, of these two linked systems.

### Module aims

The lectures fall into three segments: Renal Structure and Function, Haematology – the study of blood (aka blood sciences) and the Cardiovascular System (CVS).

Students will learn about renal function (kidney structure and function), cardiovascular pathology (including conditions such as hypertension and myocardial infarction) and cardiovascular risk (links with lipids, lipid lowering drugs etc). These lectures build on BS129 Physiology and Metabolism.

In the Haematology lectures, students will learn the nature of blood – the cellular and non-cellular components, and how it is formed (haematopoiesis). Students will also gain an understanding of

the various pathological conditions associated with blood, how they are recognised, the consequences, and how they are treated.

## **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.

Lecture 1 and 2: Kidney structure and function

Lecture 3: Cardiovascular Risk

Lecture 4: Blood cells, Plasma and Serum

Lecture 5: Haematopoiesis

Lecture 6: Blood transfusion

Lecture 7: Blood disorders

Lecture 8 - Hypertension (MW)

Lecture 9 - Angina

Lecture 10 - Heart Failure

Lecture 11 - Cardiac Arrhythmias

Lecture 12 - The Pharmacology of Anti-arrhythmic drugs

ECG workshop and self-directed learning

## **Learning outcomes**

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

- The biological principles of haematology including blood structure and homeostasis (including kidney)
- The biological basis of circulation, especially cardiac and vascular processes.
- The biological basis of neurological function, including development of the central nervous system at a cellular level.
- The functioning of these systems in both health and disease including the current treatment options for specific examples.

## **Indicative reading list**

Pocock G. and Richards. Human physiology : the basis of medicine, 3rd edn. (Oxford : Oxford University Press, 2006).

Hugh-Jones N. C., Wickramasinghe S. N. and Hatton C. Lecture notes on Haematology, 7th edn. (Blackwell, 2004).

Purves, D. et al. (Eds.) Neuroscience, 4th edn. (Sinauer, 2008)

## **Subject specific skills**

Explain the basics of haematology, including the role of kidney; formation, structure and function of blood cells

Understand the rationale for, and biology of, blood transfusion

Understand the biology of circulation through disease processes (hypertension, myocardial

infarction, angina, cardiovascular disease, heart failure, arrhythmias)

Explain the current treatment options for example blood and circulatory diseases

## Transferable skills

Adult learning, self-directed learning, team based learning and quantitative analysis of data.

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## Study

### Study time

| Type           | Required                    |
|----------------|-----------------------------|
| Lectures       | 15 sessions of 1 hour (10%) |
| Other activity | 10 hours (7%)               |
| Private study  | 125 hours (83%)             |
| Total          | 150 hours                   |

### Private study description

125 hrs of self-study and directed reading

### Other activity description

In-module assessment

### Costs

No further costs have been identified for this module.

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## Assessment

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

### Assessment group D

|                      | Weighting | Study time | Eligible for self-certification |
|----------------------|-----------|------------|---------------------------------|
| In-Module Assessment | 20%       | 30 hours   | Yes (extension)                 |

Authentic assessment, based on a common problem or dataset researchers would deal with on a regular basis in the academic environment. This is in-line with both AQSC and RSB requirements on assessments

|  | <b>Weighting</b> | <b>Study time</b> | <b>Eligible for self-certification</b> |
|--|------------------|-------------------|--|
| Blood and Circulation ECG Workshop<br>In-module Laboratory           | 10%              |                   | No                                     |
| Online Examination<br>45 min short answer paper / 45 min essay paper | 70%              | 45 hours          | No                                     |

~Platforms - AEP

- Online examination: No Answerbook required
- Students may use a calculator

### **Assessment group R**

|   | <b>Weighting</b> | <b>Study time</b> | <b>Eligible for self-certification</b> |
|---|------------------|-------------------|--|
| Online Examination - Resit<br>45 min SAQ paper / 45 min essay paper | 100%             |                   | No                                     |

- Online examination: No Answerbook required
- Students may use a calculator

### **Feedback on assessment**

Pastoral meetings with personal tutors

[Past exam papers for LF266](#)

## **Availability**

### **Courses**

This module is Core for:

- Year 2 of ULFA-B140 Undergraduate Neuroscience (BSc)
- Year 2 of ULFA-B142 Undergraduate Neuroscience (MBio)
- Year 2 of ULFA-B143 Undergraduate Neuroscience (with Industrial Placement) (MBio)
- Year 2 of ULFA-B141 Undergraduate Neuroscience (with Placement Year) (BSc)