

Full Module Title:	CLINICAL PHYSIOLOGY
Short Module Title:	Clinical Physiology
Module Code:	3HCS645
Module Level:	Level 6
Academic credit weighting:	15 Credits
School:	School of Biosciences
Department:	Department of Biomedical Sciences
Length:	1 semester
Module Leader(s):	Prof John Mellerio, extension 3564, e-mail mellerj@wmin.ac.uk
Site:	Cavendish Campus
Host course:	BSc Medical Physiology
Status:	Core: BSc Medical Physiology, BSc Biochemistry & Physiology
Relevant course titles/pathways:	BSc Medical Physiology, BSc Biochemistry & Physiology
Subject Board:	Physiology
Pre-requisites:	3HCS543 Dynamic Systems Physiology and 3HCS552 Support Systems Physiology
Co-requisites:	None
Assessment:	60% examination/40% coursework
Special features:	none
Access restrictions:	Disrequisite 3HCS550 Physiology for Biomedicine

Summary of Module content:

Some **pathologies** are of interest to physiologists because they illuminate aspects of physiology that are important to our understanding of normal function. The module examines several examples of such pathologies, for example, gastritis and peptic ulcer disease are studied to learn about local **endocrine control** and the balances in synergistic control of secretion. Hypertension and **kidney function**, the origins of circulatory shock and pulmonary oedema are other examples.

Module Aims

To provide students with a sound grasp of the physiology of selected body systems as revealed by the study of failures brought about by trauma or disease, and the treatments necessary for recovery. The intention is not to provide a potted pathology course, but to help students look at changes in the parameters of selected systems that might alter function, to encourage them to devise possible corrections for the errors, and to speculate on what pathologies might ensue should other errors arise.

Learning Outcomes

At the end of the module the student should be able to:

- describe the origins of gastritis and peptic ulcer disease;
- discuss current ideas of the bacterial and secretory origins of the disease;
- explain what the viral hepatitis diseases reveal about liver function;

- discuss the role of the kidney in regulation of the cardiovascular system and describe the genesis of cardiovascular shock when homeostasis is catastrophically overcome;
- explain tissue fluid/lymph relationships and the factors that trigger oedema, especially of pulmonary oedema;
- explain the processes that underlie the collagen diseases and account for their extensive distribution around the body;
- explain the origin of cystic fibrosis and show how the errors cause, or do not cause, problems outside the pulmonary system;
- explain what symptoms and signs might arise from disruption of normal ciliary function.

Indicative syllabus content

- Gastric structure and processes; regulation of gastric secretions and importance of local hormones and synergistic processes; current ideas of the bacterial and secretory origins of peptic ulcer disease.
- Liver structure and major functions; review of what is known of hepatitis A, B, C & D; description of normal processes that are disturbed; possible treatments.
- Role of the kidney in regulation of the cardiovascular system; erythropoietin, rennin; sodium regulation; essential hypertension & possible causes, evaluation of evidence.
- Homeostasis in the ABP & volume regulation, genesis of cardiovascular shock, how homeostatic regulation is eventually pushed beyond controlled limits and collapses.
- The balance of forces that lead to formation of tissue fluid; ECF/ICF/lymph; factors that lead to oedema, treatment regimes
- Pulmonary oedema, how it arises and why current treatment regimes are employed.
- Collagen diseases & distribution of collagen; prediction of problems compared to known pathologies; treatment rationale.
- Pulmonary structure and function; history of investigation of cystic fibrosis; current ideas of causes; prediction of other problems associated with defects.
- Ubiquitous nature of cilia; symptoms and signs might arise from disruption of normal ciliary function.

Teaching and Learning Methods

Lectures	60%
Workshop problems	20%
Case study problems	20%

Assessment rationale

The chosen assessment strategies aim to assess an understanding of the systems studied, and in particular, of the way a study of the errors in the systems can reveal the underlying normal mechanisms. To this end, the assessments will test the students' powers of integration and lateral thinking of the topics covered. The **key skills** in the module will be problem solving, and handling research literature to produce focused reports.

Assessment criteria

These are guided by the learning outcomes: students must demonstrate an understanding of the systems studied, and in particular of the way a study of the errors in the systems can reveal the underlying normal mechanisms. To this end, the assessments will test the students' powers of integration and lateral thinking of the topics covered. The **key skills** in the module will be problem solving, and handling research literature to produce focused reports.

Assessment Methods and Weightings

Coursework 40%

- Two written evaluations of a collection of research literature on the pathologies of two specific systems of their choice of those studied in the module, showing how normal functioning can be deduced from pathology data, 20% each

Examination 60%

Sources.

Essential reading

Ganong, W.F. (1997) *Review of Medical Physiology*, Appleton & Lange, Stamford, Co., USA

Kumar, P., Clark, M. (1998) *Clinical Medicine*, 4th Edn., Saunders

Clancy, J. (1995), *Physiology and anatomy a homeostatic approach*, Edward Arnold, London, UK

Appropriate titles from Mosby's Crash Course series, e.g. Sunthareswaran, R. (1998), *Cardiovascular System*, Mosby, London, UK

Further reading

Levitzky, M.G. (1995) *Pulmonary physiology*, 4th Edn., McGraw-Hill, New York, USA

Hlastala, M.P., Berger, A.J. (1996) *Physiology of Respiration*, Oxford University Press, New York USA

Lotre, C.J. (1994) *Principles of renal physiology*, Chapman Hall, London, UK

Johnson, L.R. (1997), *Gastrointestinal Physiology*, 5th Edn., Mosby, New York, USA

Irwin M. Arias, J. L. Boyer, (2001) *Liver: Biology and Pathobiology*, Lippincott Williams & Wilkins

Aaronson, P.I. et al., (2000), *The Cardiovascular System At A Glance*, Blackwell

Nimni M.E., (1988) *Collagen*, Franklin Book Company

Periodical references

Annual Review of Physiology, NEJM, BMJ, Lancet and other appropriate titles

WWW references

Web pages will be recommended at an appropriate time, including links to the Physiological Society, etc.

Date of initial Validation:2002

Dates of CASG approved modifications:

Date of re-validation/review: