

**Course Title/Code:** Cell Metabolism (MMPH6196)

**Department:** Medicine

**Objective:** Metabolism is a fundamental aspect for maintaining the functions of all types of cells. Almost all major human diseases, including cancer, diabetes, cardio-metabolic syndrome, autoimmune and ageing-related disorders are caused in part by metabolic abnormalities. Thanks to recent advances in metabolomics, the knowledge of cell metabolism is growing exponentially in recent years. Therefore, understanding the latest concepts and groundbreaking discoveries on cellular metabolism and metabolic regulation is essential for biomedical research, clinical practice and drug discovery.

**Content:** Topics include:

- Major catabolic and anabolic pathways in cellular metabolism;
- Cellular machinery for energy metabolism;
- Hormonal integration of metabolism in mammals;
- Metabolic regulation by posttranslational modifications;
- Metabolic adaptations to fasting/starvation and environmental changes;
- Control of cellular metabolism by circadian clock;
- Application of proteomics and metabolomics in metabolic research;
- Metabolic basis of major human diseases

**Learning outcomes** On completion of the module, the students are expected to:

- Describe the interrelationship of major metabolic pathways at cellular level;
- Appreciate the essential role of metabolism in maintenance of cellular functions;
- Describe the regulation of metabolism at molecular, cellular and whole-body levels;
- Explain the role of metabolic dysregulation in human disease processes.
- Be familiar with the advanced laboratory techniques in metabolic research.

The teachers, from Department of Medicine and Department of Pharmacology and Pharmacy, involved in this course have extensive experience in both basic and clinical research in this field.

**Prerequisite:** None

**Duration:** 1 semester; 2 hours/week; 24 contact hours

**Continuous assessment/examination ratio:** 40% / 60%

**Examination method and duration:** Written examination / 2 hours (60%)