## Module Template for New and Revised Modules

<table>
<thead>
<tr>
<th>Module Code</th>
<th>ME7B04</th>
</tr>
</thead>
<tbody>
<tr>
<td>Module Name</td>
<td>Basic Medical Sciences</td>
</tr>
<tr>
<td>ECTS Weighting</td>
<td>5 ECTS</td>
</tr>
<tr>
<td>Semester taught</td>
<td>Semester 1</td>
</tr>
<tr>
<td>Module Coordinator/s</td>
<td>Marian Tsanov</td>
</tr>
</tbody>
</table>

### Module Learning Outcomes with reference to the Graduate Attributes and how they are developed in discipline

On successful completion of this module, students should be able to:

1. Describe the basic functions of the human physiological systems.
2. Describe the morphological characteristics of mammalian cell types.
3. Explain the functional roles of these cell types and how their form fits their function.
4. Appreciate how these cells interact in the various organ systems.
5. Explain the homeostatic mechanisms of each organ system (you should be able to give examples).
6. Differentiate normal and pathological anatomy and physiology.
7. Explain the mechanisms of disease (e.g. diabetes, neurodegeneration etc.).
8. Be familiar with the diagnostic procedures and medical interventions for diseases.
9. Analyse the BMS material and integrate with information from their own discipline.

### Graduate Attributes: levels of attainment

- To act responsibly - Introduced
- To think independently - Enhanced
- To develop continuously - Enhanced
- To communicate effectively - Introduced

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1. *An Introduction to Module Design* from AISHE provides a great deal of information on designing and re-designing modules.
2. *TEP Glossary*
**Module Content**

**Introduction:** Integration of organ function, levels of biological organization, concepts of form fitting function, homeostasis (mechanisms of control and disturbances).

**Cells, Tissues, Organs:** the cell theory, the cell as a basic unit of life, cellular ultrastructure, intracellular organelles, cellular function in health and disease.

**Blood:** composition, function of plasma proteins, cellular component of blood, haemoglobin and oxygen transport, role of white blood cells in immunity, blood clotting, blood pathology (anaemia, abnormal clotting).

**The Immune System:** sources of immune challenges, immunological memory and specificity, mediators of immunity, immune responses, antibodies, self-tolerance, blood typing, immune system pathology.

**The Cardiovascular and Respiratory System:** components, path of blood flow through the system, anatomy of heart, heart rhythms, regulation of heart, blood vessel anatomy, blood flow to organs, anatomy of the respiratory system, mechanics of breathing, gas transport.

**The Excitable Tissues - Brain and Muscle:** divisions of the nervous system, basic brain anatomy and physiology, electroencephalogram (EEG), spinal cord, reflexes, neural cell form and function, neural communication, neurogenesis and neurodegeneration, muscle tissue types, muscle contraction, communication systems in muscle, neural muscular junction, physics of joint movement, muscle metabolism, muscle fibre types, adaptive changes in muscle.

**Bone and Cartilage:** functions, types, anatomy, extracellular matrix composition, cellular component, growth and repair, skeletal pathologies, concept of bone as an organ, pathologies of bone and cartilage.

**The Endocrine System:** components, functions, control systems, abnormal endocrine function, pancreatic hormones, insulin, diabetes.

**The Renal and Digestive Systems:** components, function, micturition, renal functional units (the nephron), renal processes (filtration, reabsorption, secretion), water balance, renal pathology, digestion (absorption, motility, secretion), accessory organs (pancreas, liver).

**Specialist lectures:**
Paediatric diabetes patients- benefits of technology, Orthopaedics, Cancer, Histopathology.

**Teaching and Learning Methods**

Lecture notes and supplemental learning material will be available on Blackboard. A Laboratory class will include Physiological Principles of Muscle.

The module aims to give an introduction to human biology and disease, such that students can appreciate the basis for scientific/technical procedures in the diagnosis, treatment and basic research associated with...
human disease. A basic understanding of terminology and practice is emphasized.

The module is aimed at students who have no prior knowledge of physiology and or biology.

The lecture series will outline the physiology and anatomy of the main body systems and introduces the cellular basis of these systems. Some principles of disease conditions will be covered. The specialist lectures and hospital laboratory visits will provide an insight into the role of various technologies in the diagnosis and management of patients. Additionally, they will show the integration of basic sciences, technology and clinical medicine across the continuum of care.
### Assessment Details

Please include the following:

- Assessment Component
- Assessment description
- Learning Outcome(s) addressed
- % of total
- Assessment due date

<table>
<thead>
<tr>
<th>Assessment Component</th>
<th>Assessment Description</th>
<th>LO Addressed</th>
<th>% of total</th>
<th>Week due</th>
</tr>
</thead>
<tbody>
<tr>
<td>Summative - Written Examination (100%)</td>
<td>A 2-hour exam paper consisting of short answer questions</td>
<td>1-9</td>
<td>100</td>
<td>December 2019 (date to be confirmed). The Examinations Office will announce the exam time and venue.</td>
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</table>

### Reassessment Requirements

### Contact Hours and Indicative Student Workload

<table>
<thead>
<tr>
<th>Contact hours: 70</th>
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<tbody>
<tr>
<td>Independent Study (preparation for course and review of materials): 72.5</td>
</tr>
<tr>
<td>Independent Study (preparation for assessment, incl. completion of assessment): 75.5</td>
</tr>
</tbody>
</table>

### Recommended Reading List

- **Human Physiology (Primary)** by Lauralee Sherwood 2010 Brooks & Cole.
- **Fundamentals of anatomy & physiology** by Martini, Nath & Bartholomew
- **Wheater's functional histology: a text & colour atlas** by Burkitt, Young & Heath
- **Essential cell biology** by Bruce Alberts et al.
- **Gray's anatomy for students**

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3 [TEP Guidelines on Workload and Assessment](#)
<table>
<thead>
<tr>
<th><strong>Module Pre-requisite</strong></th>
<th></th>
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</thead>
<tbody>
<tr>
<td><strong>Module Co-requisite</strong></td>
<td></td>
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<tr>
<td><strong>Module Website</strong></td>
<td></td>
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<tr>
<td><strong>Are other Schools/Departments involved in the delivery of this module? If yes, please provide details.</strong></td>
<td>School of Medicine, Department of Physiology</td>
</tr>
<tr>
<td><strong>Module Approval Date</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Approved by</strong></td>
<td></td>
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<tr>
<td><strong>Academic Start Year</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Academic Year of Date</strong></td>
<td>2019</td>
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