

## SEMESTER II

### LSM4215 EXTREME PHYSIOLOGY

**Pre-requisite(s):** LSM3212 Human Physiology:

**Cardiopulmonary System AND LSM3214 Human Physiology – Hormones and Health**

**No co-reading of LSM4215 with LSM3214**

**Module only open to Graduating Students**

**Workload: 28 lecture hours + 10 Student Presentations/Self-directed learning + 12 practical hours/field-trip**

**Course description:**

This module describes how the human body responds to exposure and exercise in environmental extremes such as thermal stressors, hypoxic and hyperbaric conditions and trauma. Latest research findings, including some of the controversial topics, will be presented and discussed. Students will understand what the physiological changes are under extreme conditions and how acute and chronic adaptations occur in response to these stresses. This will allow students to appreciate how the human body adapts to changing environments.

S/N	Topics	Lecture hours
1	<b>Introduction</b> Provides an overview of the module.	4 JL/TT
2	<b>Extreme Exercise</b> Describes how the human body responds to extreme exercise at sea level.	4 Guest
3	<b>Heat Stress</b> Highlights the challenges for humans working in warm and humid conditions and various heat mitigation strategies to augment performance and safety.	4 JL
4	<b>Cold Stress</b> Outlines the aetiological factors that may predispose one to hypothermia. Clinically relevant findings and the associated treatment for rewarming will be discussed.	4 Guest
5	<b>Hypoxia &amp; Altitude</b> Describes the physiological challenge associated with exposure to environmental hypoxia at high altitude along with adaptive and pathological responses to this challenge.	4 Guest
6	<b>Hyperbaric &amp; Underwater</b> Provides an overview of how high pressure perturbs the physiological systems. This lecture review will focus on the acute responses that are relevant to diving.	4 Guest
7	<b>Trauma</b> Presents the complexity of physiologic responses during trauma and how a responder must prioritize appropriately to support healing and prevent further injury.	4 Guest
	<b>Total lectures :</b>	<b>28h</b>
	<b>Student presentations/self-directed learning:</b>	<b>10h</b>
	<b>Field-Trips and Practicals:</b>	<b>12h</b>
	<b>Total hours:</b>	<b>50h</b>

**TEXT BOOK:**

Physiological Bases of Human Performance during Work and Exercise, 1<sup>st</sup> Edition 2008 (Churchill Livingstone); Taylor & Groeller; ISBN: 9780443102714

**MODE OF ASSESSMENT:**

20% student group presentation + 20% field-trip report + 60% final exam

**MODULE CO-ORDINATOR:**

Dr Thai Tran (TT)

(Tel: 6516-3663; E-mail: phstt@nus.edu.sg)