

## SEMESTER II

### LSM4264 FRESHWATER BIOLOGY

**Prerequisite:** LSM3254

**Workload:** 26 lecture hours + 24 tutorial/discussion/field trip hours

Freshwater is essential to life, yet constitutes less than 3% of Earth's total water. With many freshwater ecosystems under threat, understanding the biology of freshwaters is fundamentally important to their management, conservation, and restoration. This module introduces the study of inland waters, with emphasis on Singapore. Through lectures, directed readings and discussions, field trips, and project work, we will focus on topical areas including aquatic biodiversity and ecology, aquatic conservation, freshwater ecosystem services, threats to fresh waters, anthropogenic effects, sustainable water use, aquatic invasive species, and policies, regulation and management of freshwater resources in local and international contexts.

S/N	Topics	Lecture hours
1.	<b>Introduction:</b> Course overview; introduction to limnology	26
2.	<b>Freshwater habitats:</b> Associated limnological concepts	
3.	<b>Freshwater biodiversity:</b> General concepts	
4.	<b>Freshwater ecology:</b> Selected concepts; sampling techniques	
5.	<b>Aquatic conservation/human water use:</b> Conceptual framework; freshwater ecosystem goods and services; sustainable water use	
6.	<b>Aquatic invasive species:</b> Introduction to invasion biology and aquatic invasive species; invasion process and pathways; prevention, detection, and management of aquatic invasive species	
7.	Freshwater biology work/research in Singapore	
<b>Total lectures: 26h</b>		
<b>Tutorials/discussions/field trips: 24h</b>		
<b>Total hours:</b>		50h

**REFERENCES (Recommended text\*):**

- Selected scientific papers and technical reports
- Dodson S, 2004. *Introduction to Limnology*. McGraw-Hill\*
- Dodds WK, 2002. *Freshwater Ecology: Concepts and Environmental Applications*. Academic Press\*
- Dudgeon D (ed.), 2008. *Tropical Stream Ecology*. Academic Press
- Yeo DCJ, Wang LK, Lim KKP, 2010. *Private Lives: An Exposé of Singapore's Freshwaters*. Raffles Museum of Biodiversity Research
- Yeo DCJ, Lim KKP, 2011. Freshwater Ecosystems. In: Ng PKL, Corlett RT, Tan HTW (eds.) *Singapore Biodiversity: An Encyclopedia of the Natural Environment and Sustainable Development*. Raffles Museum of Biodiversity Research. Pp. 52–63.

**MODE OF ASSESSMENT:** Continual assessment 60%; final open-book exam 40%.

**MODULE CO-ORDINATOR/LECTURER:**

Dr Darren Yeo Chong Jinn

(Tel: 6516-2709, E-mail: dbsyeod@nus.edu.sg)