

SEMESTER I
LSM4267 ANIMAL COMMUNICATIONS AND SENSORY ECOLOGY

Prerequisite: LSM3267

Workload: 26 lecture hours + 24 practical/tutorial hours

Course description:

Organisms rely on various sensory systems to detect & process environmental information (e.g. light, sound) in their daily activities (e.g. foraging, navigation, conspecific interactions). Although humans can sense some of these animal signals, we fail to adequately understand their biological functions due to limitations in our sensitivity range, where colour vision and hearing in animals (visual: 300-750nm; acoustics: <50Hz to >20kHz) is superior to humans. To understand the biological implications of these signals also require adequate knowledge of the instrumentations involved in the characterization and quantification of these signals.

Such that a student can acquire adequate knowledge to collect, quantify and statistically analyze animal & environmental signals & cues, this module will introduce the types of signals (physical and biological perspective) and (ii) methodologies involved in accurate detection, quantification/characterisation of visual & acoustic signals. Once students are familiar with the techniques of signal collection and quantification, each student is then expected to (1) choose an organism and describe its behaviour (e.g. foraging, courting, etc) and characterize its acoustic and/or visual signals (individual research project) and submit it as a webpage. Students are also required to form a group, and propose a descriptive project and if possible, conduct a simple experiment that involves signal quantification (presentation as an e-poster). Relevant industrial applications relating to biomimicry will also be introduced.

S/N	Tentative Topics	Lecture hours
1	Diversity & Questions on Animal/Plant Signals Applied Sensory Biology: Environmental & Conservation Sciences	
2	Signal Production, Propagation & Reception (i) Sound (ii) Light	
3	Signal Detection & Analysis: measuring (i) Acoustics (ii) Light	
4	Animal 'Supersense': (i) Magnetoreception (ii) Electroreception (iii) Infrared/heat reception (iv) Vibrations (v) Hydrodynamic stimuli	
5	Biological & Industrial Applications	
Total Lectures:		26h
Practicals/Tutorials:		24h
Total hours:		50h

*TBC

REFERENCES (Recommended text*):

Principles of Animal Communication (Authors: JW Bradbury & SL Vehrencamp) 2e 2011

MODE OF ASSESSMENT: 60% CA; 40% Exam

MODULE CO-ORDINATOR/LECTURER:

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