Enquire Teaching Timetable

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Course Outcome

ENSC 3520 - Environmental and Biochemical Toxicology

Learning Outcome

Students will understand the sources and chemical nature of selected toxicants, and the carcinogenesis, hepatotoxicity and neurotoxicity caused by the toxicants. They will know how the toxicity of chemical substances including some common toxic metals, carcinogens, pesticides and natural toxins can be changed. They will also study the basic techniques in ecotoxicology, and able to plan and carry out environmental monitoring and ecotoxicological studies of the impacts of environmental pollutants on local organisms.

學生能夠瞭解到一般毒物包括金屬、致癌物、農藥和天然毒物的來源和其所引致的癌病，肝和神經系統中毒的原因，及導致生物中毒的因素。學生應學習生態毒理學的基本技術，並能夠計劃和進行環境監測，及針對環境污染物對本地生物的影響，進行生態毒理學研究。

学生能够了解到一般毒物包括金属、致癌物、农药和天然毒物的来源和其所引致的癌病，肝和神经系统中毒的原因，及导致生物中毒的因素。学生应学习生态毒理学的基本技术，并能够计划和进行环境监测，及针对环境污染物对本地生物的影响，进行生态毒理学研究。

Course Syllabus

1. Sources and chemical nature of environmental toxicants
2. Environmental effects on the selected toxicants
3. Microbial bioassay and genotoxicity study
4. Biomonitoring, bioindicators and biomarkers
5. Ecological effects of the toxicants (Eco-toxicology)
6. Regulatory toxicology and risk assessment
7. Biochemical aspects of toxicology and dose-response relationship
8. Biological factors that influence toxicity (in vitro/ in vivo analyses, toxicant processing)
9. Chemical factors that influence toxicity (classes of toxicants)
10. Chemical carcinogenesis, mutagenesis and cellular sites of toxic actions
11. Hepatotoxicity and drug metabolisms (Phase I, II and III metabolism)
12. Reproductive and developmental toxicity (teratogenesis)
13. Neurotoxicity and natural toxins

1.環境毒物的來源和化學性質
2.所選毒物對環境的影響
3.微生物生物測定和遺傳毒性研究
4.生物監測，生物指示劑和生物標記物
5.有毒物質的生態影響（生態毒理學）
6.監管毒理學和風險評估
7.毒理學的生化方面和劑量反應關係
8.影響毒性的生物因素（體外/體內分析，毒物處理）
9.影響毒性的化學因素（毒物類別）
10.化學致癌作用，誘變和毒性作用引起的細胞改變部位
11.肝毒性和藥物代謝（I期，II期和III期代謝）
12.生殖和發育毒性（致畸作用）
13.神經毒性和天然毒素

1.环境毒物的来源和化学性质
2.所选毒物对环境的影响
3.微生物生物测定和遗传毒性研究
4.生物监测，生物指示剂和生物标记物
5.有毒物质的生态影响（生态毒理学）
6.监管毒理学和风险评估
7.毒理学的生化方面和剂量反应关系
8.影响毒性的生物因素（体外/体内分析，毒物处理）
9.影响毒性的化学因素（毒物类别）
10.化学致癌作用，诱变和毒性作用引起的细胞改变部位
11.肝毒性和药物代谢（I期，II期和III期代谢）
12.生殖和发育毒性（致畸作用）
13.神经毒性和天然毒素

Assessment Type

	Assessment Type	Current Percent
1	Essay test or exam	50
2	Short answer test or exam	50

Feedback for Evaluation

Feedback from course teaching evaluation discussion with students' comments and suggestions from alumni who took the course
科目評鑑 與學生會談 取納舊生意見和建議
科目评鉴与学生会谈取纳旧生意见和建议

Required Readings

Hodgson, E. (ed) 2010. A Textbook of Modern Toxicology, 4th Ed., John Wiley & Sons, Inc. 648 p. RA1211.H62 2010.

Recommended Readings

Klaassen, C. (ed) 2013. Casarett & Doull's Toxicology: The Basic Science of Poisons, 8th Ed., McGraw Hill Education, 1423 p. QV600 615.9