**TOX 503 (1 Credit)**

**Skin Toxicology and the Environment**

**Syllabus**

**Fall 2016**

Course Overview

This course teaches the basic biology of skin and the protective role it plays in shielding the body from the daily barrage of environmental and lifestyle insults. The course covers modules on basic skin anatomy, skin penetration and skin diseases exacerbated by environmental insults that contact skin including allergens, chemicals, radiation and pollution. A discussion on the regulatory aspects that govern the distinction between therapeutics and cosmetic skin care products is included. Modules are supplemented by a journal article review. Students will be responsible for presenting and participating in the discussion of these state-of-the art research papers.

Prerequisites:

There are no prerequisites for this course; however, students may benefit from having taken one or more of the following courses.

IND409 - Cell Biology

MBI 473 - Immunology

TOX592 - Immunotoxicology

PTH509 - PATHWAYS OF HUMAN DISEASE

Recommended Reference on Skin Biology

Fitzpatrick's Dermatology in General Medicine

Bolognia Dermatology

The Poison Paradoxs (J. Timbrell)

Toxicology of the Skin (Monteiro-Riviere)

Class Time & Place

Thursday’s at 1:30 – 2:30 in conference room 4-8820

Homework Assignments

Reading and presenting journal papers

Computational examples that reinforce class concepts.

Grading

Will be based on class attendance (50%)

Class participation (25%)

Homeworks (25%)

***Detailed Course Description***

The course is intended for graduate students interested in understanding skin biology and how environmental factors can impact skin function and disease. The content is geared towards students interested in toxicology but topics discussed are broad and will appeal to students interested in skin cancer, drug delivery, and cosmetics.

**Module 1 Skin Structure and Function**

1. Sept 1: Skin anatomy I: Epidermis

2. Sept 8: Skin anatomy II: Dermis and Appendages

3. Sept 15: Skin Immunity (Ryan)

**Module 2 Skin Penetration**

4. Sept 22: Skin penetration I: Mechanisms and Methods

5. Sept 29: Skin penetration II: Metabolism and Transport

6. Oct 5 (wed 10am): Journal Review –

7. Oct 12: (wed 10am): Journal Review -

**Module 3 Skin and the Environment**

8. Oct 19: (wed 10am -Keck) Dermatitis Lecture

9. Oct 26: (wed 10am) Journal

10. Nov 2: (wed 10am) UVR and Ionizing Radiation (Ryan)

11. Nov 9: (wed 10am) Particulates

12. Nov 16: (wed 10am) Journal

**Module 4 Skin Care and Cosmeceuticals**

13. Nov 23: (wed 10am) Regulatory aspects Cosmetics, Chemotherapeutics (Ryan)

14. Nov 30: (wed 10am) Herbals, lasers and tattoos (Ryan)

15. Dec 7: (wed 10am) Journal