BMED/AE/CHE/ME 4765 Drug Design, Development, and Delivery (Elective)

Catalog Description: BMED 4765 Drug Design, Devlpmnt&Delivery (3-0-3)
Prerequisite(s): CHEM 3511 or CHEM 4511
Introduction to the pharmaceutical development process, including
design of new drugs, synthesis and manufacturing issues, and
methods for delivery into the body.

Textbook: None

Prepared by: Mark Prausnitz

Topics Covered:
1. Introduction
2. Drug Design
3. Drug Development
4. Drug Delivery
5. Case Study 1: Testosterone patch
6. Case Study 2: Ocular Dorzolamide
7. Case Study 3: Leuprolide Implant

Course outcomes:
Students who complete this course will be able to:
Outcome 1: Appreciate critical issues, perform analysis, and make quantitative calculations related to drug design (Student Outcome e)
Outcome 2: Appreciate critical issues, perform analysis, and make quantitative calculations related to drug development (Student Outcome e)
Outcome 3: Appreciate critical issues, perform analysis, and make quantitative calculations related to drug delivery (Student Outcome e)
Outcome 4: Integrate concepts from drug design, development and delivery and appreciate their interdependence (Student Outcome j)
Outcome 5: Understand the different phases of the pharmaceutical process (Student Outcome j)
Outcome 6: Appreciate the role of alternative methods and broader implications of the pharmaceutical process (Student Outcome j)
Outcome 7: Communicate with professionals in the pharmaceutical community (Student Outcome g).
Correlation between course outcomes and student outcomes:

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<th>BMED 4765</th>
<th>Biomedical Engineering Student Outcomes</th>
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The Wallace H. Coulter Department of Biomedical Engineering Student Outcomes:

a. an ability to apply knowledge of mathematics, science, and engineering;
b. an ability to design and conduct experiments, as well as to analyze and interpret data;
c. an ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, societal, political, ethical, health and safety, manufacturability, and sustainability;
d. an ability to function on multidisciplinary teams;
e. an ability to identify, formulate, and solve engineering problems;
f. an understanding of professional and ethical responsibility;
g. an ability to communicate effectively;
h. the broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context;
i. a recognition of the need for, and an ability to engage in lifelong learning;
j. a knowledge of contemporary issues;
k. an ability to use the techniques, skills, and modern engineering tools necessary for engineering practice;