

Biomaterials Chemistry – Course Outline

Course Number	SC/CHEM 4093 3.00
Prerequisites	SC/CHEM 3051 3.0 or SC/CHEM 3090 3.0
Course Director	Dr. Kanwal Tanwir E-mail: ktanwir@yorku.ca
Lecture Details	Tuesday 16:00 (180 mins) CB-122
Office Hours	TBA (or by appointment)
Course Text	Detailed Lectures will be provided in class
Course Content	<p>The lecture component of this course will cover the following topics.</p> <ul style="list-style-type: none">• Introduction to bioactive and bioinert materials<ul style="list-style-type: none">○ Various aspects of biomaterials in terms of structure, properties and behavior upon contacting the biological systems• Understanding the emerging advancements in biomaterials research and industrial application<ul style="list-style-type: none">○ The development of biologically inspired materials with controlled properties that emulates the natural systems○ Methodologies to surface modifications for enhanced biocompatibility○ The design of three dimensional models for tissue engineering
Learning Outcome	<p>Students will learn to</p> <ul style="list-style-type: none">• identify bioinert and bioactive implantable materials• apply basic concepts of biomechanics to biomaterial design and characterization• derive relationship among composition–structure–property for implantable materials• identify major steps in the design, development, and synthesis of biomaterials

- learn about strategies for surface modification of implantable materials for enhanced biocompatibility
- mechanisms involved with biologically driven materials self-assembly
- predict both *in-vitro* and *in-vivo* performance and degradation mechanisms of implantable materials
- describe the emerging methodology to the design of biomimetic materials and tissue engineering

Grade Evaluation The grading scheme for the course is as follows

Participation (5%)

Midterm (35%)

Essay Assignment (20%)

Final Exam (40%)

Final Grade Faculty of Science approved letter grades

NOTE: Numerical grades are only guides for assigning the final grades. The Course director retains the prerogative on how to use numerical grades to assign letter grades.

University Policies Students are required to make themselves aware of school policies relating to Academic Honesty and Integrity, Access, Religious Accommodation, Student Conduct and other matters. A summary of these policies can be accessed on York University Webpage.