# CHEM ENG 372: BIONANOTECHNOLOGY & NANOSCALE PHENOMENA

## Course Objective

This course aims at creating a vivid mental depiction of biomolecular machines and unraveling their most fundamental underpinnings - energy and entropy – through a combination of highly acclaimed and exceptionally thought-provoking books, critical and creative thinking exercises, and guided exploration of contemporary bionanotechnology applications.

## Course Evaluation

* Concept maps (20%)
* Quantitative HW assignments (30%)
* Presentations (20%)
* Term paper (30%)

## Time Commitment

* 4-6 hours/week outside the classroom

## Prerequisites

* A course in thermodynamics and a course in calculus. but an interest in “connecting the dots” and good quantitative skills are a plus

## Course Study Materials

* **Module 1: “The vital question: energy, evolution, and the origins of complex life”** by Nick Lane (**ISBN-13:** 978-0393352979)
* **Module 2: “Physical biology of the cell”** by Rob Phillips et al. (**ISBN-13:** 978-0815344506); **“Why information grows: the evolution of order, from atom to economics”** by Cesar Hidalgo (**ISBN-13:** 978-0465096848)
* **Module 3:** Selected publications from scientific journals