

**Course Syllabus BMS 575**

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**Credits:** 3

**Prerequisites:** 10 credits in biological sciences or permission of the instructor

**Place & Time:** Gilman 1312, Monday & Wednesday, 10:10 - 11:25 AM

**Announcements** to all course participants (students, instructors) will occur either through WebCT Gold or by email: [bms575students2011@iastate.edu](mailto:bms575students2011@iastate.edu) and [bms575faculty2011@iastate.edu](mailto:bms575faculty2011@iastate.edu).

**Instructors:**

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***Course Title: An advanced course on cellular and Molecular Biology***

**Course Description:** This course provides a thorough overview of molecular biology of cell. Major topics include regulation of DNA replication, transcription, translation, RNA metabolism, energy metabolism, macro-molecular trafficking, cell communication and extracellular matrix. Additional focus would be on molecular basis of human and animal diseases. Course will also cover potential therapeutic approaches.

**Course Format:** Course format will be units of ~30 lectures (75 min each). Instructors will give a thorough overview of general topics in the individual units with some in depth analysis and discussion of selected topics. There will be tests on each topic. Unless an instructor decides otherwise, most tests will be take home exams. As a form of evaluation, instructor may design questions around a research article on a related topic.

**Organization/Teaching Philosophy:** This course is meant to challenge students to ask innovative questions in a rapidly evolving field of cellular and molecular biology. Given the varied background and style of instructors, students will have an opportunity to assimilate multiple perspectives.

**Required Text for the Course:**

Alberts et al., "Molecular Biology of the Cell", 5<sup>th</sup> ed., 2008

**Course Objectives & Goals – upon completion of this course, students will:**

1. possess substantial knowledge of structure and function of molecules and cells to explain: i) Organization and role of biomolecules within cells, ii) utilization of genetic material, iii) exchange of information between cells.
2. be familiar with basic experimental methodology in molecular and cell biology
3. be able to critically evaluate and judge original scientific literature

**Grading:** There will be relative grading.

**Participation:** Students are expected to attend all classes. Absences are only acceptable with prior permission of the Instructor-in-Charge.

**Special needs and accommodations:** Please address any special needs or special accommodations with the Instructor-in Charge at the beginning of the semester or as soon as you become aware of your needs. Those seeking accommodations based on disabilities should obtain a Student Academic Accommodation Request form from the Disability Resources Office (294-6624, located in 1076 Students Services Building).

**Schedule (as of 08/02/2011)**

Location: Gilman 1312 (10:10-11:25 AM) Mondays and Wednesdays

Instructor	Topic	Chapter from Cell Biology Book by Elberts et al	Number of lectures (75 min each)
R. Singh (4 Lectures)	From DNA to protein & Control of gene expression	6 & 7	August 22, 24, 29 & 31
J. Beetham (5 Lectures)	Proteins	2, 3 & 8	September 5, 7, 12, 14 & 19
M. Shogren-Knaak (4 Lectures)	Chromosomes, DNA replication and Repair	4 & 5	September 21, 26, 28 & October 3
V. Anantharam (5 Lectures)	Intracellular compartment and Protein sorting	10, 12 & 13	October 5, 10, 12, 17 & 19
R. Martin (3 Lectures)	Membrane transport and Electrical properties of membranes	11	October 24, 26 & 31
I. Schneider (5 Lectures)	Cytoskeleton & Cell Cycle	16, 17 & 18	November 2, 7, 9, 14 & 16
W. Hsu (5 Lectures)	Cell Communication	14 & 15	November 28, 30, December 5, 7 & 12
(Singh-Exam)			December 14