



**MC212 Aug. 2:0**

## **Advances in Cell Biology**

### **Instructor**

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### **Teaching Assistant**

Email:

**Department: Microbiology and Cell Biology**

Course Time: Wed., Fri., 9:00 - 10:00 AM

Lecture venue: MCB Lecture Hall

Detailed Course Page: <http://mcbl.iisc.ac.in/courses.html>

## **Announcements**

### **Brief description of the course**

This course can avail by the senior undergraduate or first year graduate/Integrated PhD students.

### **Prerequisites**

None

### **Syllabus**

Concepts: Prokaryotic and eukaryotic membrane structure, composition, organization and transport; Organelle structure, function and their biogenesis includes nucleus, endoplasmic reticulum, Golgi, endosomes, lysosomes and lysosome-related organelles, autophagosomes, peroxisomes, mitochondria and chloroplasts; Protein trafficking in-and-out of the organelles; Cytoskeletal elements and organization; Cell adhesion and junctions; Intra and extra cellular signaling; Cell cycle, cell division (asymmetric and symmetric) and stem cells; Cell death and protein homeostasis pathways and Cellular diseases.

Methods: Introduction and evolution of light microscopy; Electron microscopy; Cytohistochemistry; Flow cytometry; Pulse-chase and subcellular fractionation; Proteomics and Protein-protein interaction approaches

and genome-wide RNAi or small molecular screens to study the various cellular pathways.

### **Course outcomes**

Students will learn current knowledge on cell biology including basic techniques

### **Grading policy**

40% mid term exam, 20% assignments and 40% final exam

### **Assignments**

Presenting research papers, group discussion, answers for given questions

### **Resources**

Molecular Biology of The Cell, Fifth edition, Alberts, B., Johnson, A., Lewis, J., Raff, M., Roberts, K. and Walter, P.

Physical Biology of the Cell, Second edition, Phillips R., Kondev, J., Theriot, J. and Garcia, H. G.

Lewin's GenesX, Lewin, B., Krebs, J.E., Goldstein, E.S. and Kilpatrick, S.T.