

This course is intended for SIMS graduate students with an interest in cell and molecular biology. The molecular biology aspect of this course primarily deals with nucleic acids and proteins and how these molecules interact within the cell to promote proper growth, division, and development. It will especially emphasize the molecular mechanisms of DNA replication, repair, transcription, protein synthesis, and gene regulation in different organisms. The cellular biology aspect of the course will provide an in-depth study of subcellular organelles and macromolecules that a cell consists of and an understanding of their functions in diverse biological phenomenon including human diseases at the cellular levels. Specifically, the part will develop insight into the complexities of cell structure and function, cell signaling, cytoskeleton, cell division, protein sorting and intracellular trafficking. We will highlight how these processes contribute to the function of the organism as a whole and how their disruption can lead to diseases.