Course title	Principles of Genetics and molecular biology
Course number	0501217
Credit hours	3
Cell biology coordinator	Dr. Diala Abu-Hassan

Reference:

The Cell: A Molecular Approach, Geoffrey M. Cooper and Robert E. Hausmann, 4th or 5th edition, Sinauer Associates.

Topic	Week	Achieved ILOs	Reference
Biomembranes and membrane proteins and their role in plasma membrane transport	1	A3-6	Ch. 2 (pp. 58-64) Ch. 13 (515-543)
Protein sorting and transport, and endoplasmic reticulum	1	A7-8	Ch. 10 (373-398)
The Golgi apparatus and vesicular transport	1	A9-10	Ch. 10 (398-412)
Lysosome, endocytosis, endocytosis, and lysosomal storage diseases	2	A11-13	Ch. 10 (412-416) Ch. 13 (544-553)
Mitochondria and peroxisomes	2	A14-16	Ch. 10 (421-431, 450-455)
The nucleus	2	A17-18	Ch. 9 (345-365)
The actin cytoskeleton and cell movement	3	A19-20	Ch. 12 (459-482)
Microtubules and intermediate filaments	3	A21-23	Ch. 12 (482-510)
The extracellular matrix	3	A24-27	Ch. 14 (564-582)
Cell signaling	4	A28	Ch. 15 (589-634)
The cell cycle	4	A29	Ch. 16 (641-675)
Cell proliferation, differentiation, and death	5	A30	Ch. 17 (681-692)
Cancer: a cellular perspective	5	A31	Ch. 18 (713-723)

Student are expected to achieve the following by the end of the course:

A1-	Recognize the different cell models.
A2-	Learn the molecular components of cells.
A3-	Understand the structure of plasma membranes of eukaryotic cells.
A4-	Know the different types of membrane proteins.
A5-	Recognize the role of membrane proteins in transport.
A6-	Understand the molecular mechanism of cystic fibrosis.
A7-	Understand the structure and role of the endoplasmic reticulum in protein synthesis and sorting.
A8-	Understand the role of the endoplasmic reticulum in lipid synthesis.
A9-	Understand the structure and roles of the Golgi apparatus in the synthesis of cellular molecules.
A10-	Understand the mechanism of vesicular transport.
A11-	Understand the structure and role of lysosomes and endosomes.
A12-	Understand the mechanism of endocytosis.
A13-	Recognize lysosomal storage diseases.
A14-	Understand the structure of the mitochondria.
A15-	Discuss mitochondrial diseases.
A16-	Understand the structure and function of peroxisomes.
A17-	Understand the structure of the nucleus and the nuclear membrane.
A18-	Know the nuclear lamina diseases.
A19-	Understand the structure and organization of the actin cytoskeleton.
A20-	Understand the role of actin and myosin in cell movement and muscle contraction.
A21-	Understand the structure and organization of microtubules and their role in vesicular transport.
A22-	Understand the structure and role of intermediate filaments.
A23-	Know the association of keratin dysfunction in skin diseases.
A24-	Recall the different components of the extracellular matrix.
A25-	Recall the steps involving the synthesis of collagen proteins.
A26-	Recall diseases related to collagen synthesis.
A27-	Understand the mechanisms of cell-matrix and cell-cell interaction.
A28-	Recall the different modes of cell signaling with emphasis on cell surface receptors and their intracellular signaling molecules and their cellular effects.
A29-	Understand the phases and molecular control of the cell cycle.
A30-	Understand the molecular regulation of cell death.
A31-	Understand the types and properties of cancer cells.