

## BTEC 564 Protein Biotechnology

### 2019– 2020 Fall Syllabus

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**Catalog Description** :

Aspects of the structure-function relationships of proteins including folding, structural motifs, ligand binding, properties exploited in purification, analytical techniques, uses and applications of proteins in biotechnology

**Recommended Reading** :

Fundamentals of Protein Biotechnology, Stein. CRC press (1990)

Proteins: Biotechnology and Biochemistry; Gary Walsh. Wiley (2002)

<b>Week 1</b>	Introduction to the course Biochemical characteristics of proteins. Protein synthesis.
<b>Week 2</b>	The overview of the differences between the eukaryotic and prokaryotic protein synthesis
<b>Week 3</b>	Protein folding, 3D structure formation. Chaperons. Folding problems, folding diseases
<b>Week 4</b>	Protein sorting and targeting; posttranslational modification of proteins and their analysis
<b>Week 5</b>	Proteins as biological effectors (immunoglobulins, protein hormones, enzymes ....)
<b>Week 6</b>	MIDTERM
<b>Week 7</b>	Recombinant protein technology
<b>Week 8</b>	Heterologous expression systems; Protein purification and analysis
<b>Week 9</b>	Production of human therapeutic proteins and enzymes
<b>Week 10</b>	Large scale industrial protein production, cell banks, GLP and GMP
<b>Week 11</b>	Protein improvement: Protein engineering and design of more effective proteins
<b>Week 12</b>	Protein improvement: Synthetic biology-1
<b>Week 13</b>	Protein improvement: Synthetic biology-2
<b>Week 14</b>	REVISION
<b>FINAL EXAM</b>	

<b>Grading:</b>	Midterm	35 %
	In-class discussions, assignments and attendance	15 %
	FINAL exam	50 %