



**SYLLABUS FOR PREMEDICAL
GENERAL ANIMAL BIOLOGY
COURSE CONTENTS
Zoo-145**

Campbell's Biology Book				
Lecture	6 th edition	8 th edition	9 th edition	Subject
	Pages			
1		68	114	Macromolecules
	64	69	115	Carbohydrate
		70		Monosaccharides Fig. 5.3
	65	71	116	Disaccharides (Fig. 5.4,5.5)
2	66	72	116	Polysaccharides Storage poly Fig. 5.6
	67	73	118	Structural poly, Cellulose Fig. 5.7
	68-69	74-75	120	Lipid structure, bonds Fig. 5.10
	69	75-76	120	Triacylglycerol = triglyceride
				Saturated, unsaturated fatty acids Fig. 5.11
	70	76-77	122	Phospholipids, Structure, Behavior toward water
	71	77-79	123	Proteins: polypeptide, Amino acids, R group, (Fig.5.15)
	329	384	427 428 429	Viral genomes Fig 19.3 sizes Types of genomes , Names of viruses Capsids & Envelopes Capsid & Strutrane (capsomeres) Viral envelopes: Origin, structure Bacteriophages
	330-331	389	430	Why virus need host cells: = Ribosomes, metabolic enzymes (Fig. 19.4)
3	331-332	385	431	Lytic cycle & virulent virus (Fig. 19.5)
	332	386	432	Lysogenic cycle & temperate virus (Fig. 19.6)

	332,333, 334	388	432	Lysogenic cycle Fig. 19.6, structure of viral envelopes.
	334	387,	433	Enveloped virus, Fig 18.6 DNA virus (Herpes)
	335,336	389	435	RNA virus Example HIV & Aids + Figure 19.8
4	112	98	146	A panoramic view of the cell Prokaryotic cells & Prokaryotes
	112	98	144	Fig 6.5 structure of Prokaryotes
	114,115	100, 101	144	Figs. Only (6.8)
	528	556- 557	616	Function of prokaryotic cell wall (three Functions)
	528-529	557- 559	618- 619	Gram stain Fig. 27.5 Fig. 27.2* pili
	529-530	558- 559	145- 146	Capsule & pili Methods: The gram stain & structures Many prokaryotes are motile. Flagellar action
	530	557	557	Fig. 27.5 Nucleoid region
	532	564	610	Prokaryotes, nutrition groups: photoautotrophs, Chemoautotrophs, Photoheterotrophs, Chemoheterotrophs, Saprophytes, Parasites
Cell Organelles				
5	138-143	125- 128	171- 173	Cell membrane from page
				(A) Membrane models Fig 7.3,7.4 A & B (B) A membrane is a fluid mosaic of lipids -What is a fluid Fig. 7.3
	114-117	102- 104	148- 149 150	Nucleus Fig 6.9, Structure & function of the following a) Nuclear Membrane b) Nuclear Pores c) Nuclear Lamina d) Chromatin e) Nucleolus

	111	117, 118	148	Ribosomes build a cell's protein (structure & function), Fig 7.1 0
6	118	104-105	151	Two types of ER, the difference between SER & RER Fig 7.11
	119	104-105	151	Functions of SER, Rough ER & Synthesis of Glycoproteins, Transport vesicles
	119	105	151	Cell membrane, RER
	120	105	152	Structure and Function of Golgi apparatus Fig.7.12
7	121-122	107	153	Lysosomes are digestive Fig. 7.13 & 7.14
		109-110	154-157	Mitochondria structure & function & Fig. 7.17
	126	112	158	The cytoskeleton Fig. 7.21
	127	113	159	Microtubules
	128	114	160	Centrosomes & centriols Fig. 7.22
	128,129,130	114-115	160	Cilia & Flagella Fig. 7.23*, 7.24 & 7.25
	130-132	116	162	Microfilaments Fig.7.27
How things get into and out of cells				
8	138-142	125-128	171	"Membrane models have..." the term; Amphipathic
	142	126	173	Fluid mosaic model
	142-144	128-130	174	"Membranes as Mosaics of structure & Function" Term; integral proteins, peripheral proteins, "carbohydrates and cell to cell recognition" Figure 8.5
9	144	131	177	"Permeability of the lipid Bilayer" "Transport proteins"

	145	132	178	"Passive transport is diffusion.," Terms; concentration gradient. Passive transport. "Osmosis is the passive transport. ..." Terms; hypertonic, isotonic.
	146-147	133-135	179-180	Terms; osmosis, osmoregulation Page 140 The term; facilitated diffusion
	148-149	135-136	180	The term; active transport e.g. Sodium-Potassium pump, Figure 8.14 = 8.15*
	149-151	136-137	180	The term; membrane potential, co- transport
	151-152	138-139	184	"Exocytosis & endocytosis. ..." Terms; Phagocytosis, pinocytosis. Receptor-mediated endocytosis (Case study: Familial hypercholesterolemia)
Enzymes				
10	96	151	198	Enzymes speed up metabolic reactions by lowering energy barriers (Fig 6.9 6.10) = 6.12, 6.13*
	97	153	199	Enzymes are substrate specific
	98	154	200	The active site is an enz. Catalytic center Fig. 6.12 = 6.15*
	99-100	155-156	202	A cell's physical and chemical environment affects enzyme active, cofactor, Enzy inhibitors. (Fig. 6.13, 6.14) = 6.16, 6.17*.
11			204	Metabolic control often depends on allosteric.
	101	157	205	Feedback inhibition, cooperativity (Fig.6.15, 16) = 6.18, 6.19*
	101,102	159	206	The localization of Enz. within a cell (Fig. 6.17) = 6.20*
Energy Production - Cellular Respiration				
12	155-156	162-164	214	Principles of Energy Harvest
	156	165		Cells recycle the ATP they use for work. The NAD, NADH (Fig. 9.4)
	160, 161	166-167		The Process of cellular Respiration Respiration involves glycolysis (Fig 9.6)

	161	167-169	218	the Krebs cycle, and Election transport an over views Glycolysis harvests chemical energy oxidizing glucose to pyruvate Fig. 9.7).
13	164	170	219	The Krebs cycle (Summary of Krebs cycle chemiosmosis Fig. 9.10
	164,165,166	170, 171, 173, 174, 175	220-222	The inner mitochondria, Electron Transport. (Fig. 9.11 show only) Fig. 9.12, Fig. 9.13. Fig. 9.15, Fig. 9.16).
	167-173	177-180	222-226	Chemiosmosis 159) Fig. 9.11. Fermentation (Fig. 9.17, 9.18, 9.19, 9.20).
The Cell Cycle: Meiosis and Sexual Life Cycle				
14	216-217	228-230	274	Cell division distributes identical sets (genome-somatic cells-gametes-chromatin-sister chromatids-centromere- mitosis-cytokinesis- meiosis)
15		230	277	The mitotic cell cycle fig. 12.4
	218-219	230-232	278	The stages of mitotic cell division in an animal cell figs.12.5,12.6a
	221	234	280	Cytokinesis divides fig. 12.8
	236-239	251	297	The human life cycle fig. 13.4a = 13.5* (karyotype-homol.chrom-sex chrom.autosomes- gametes-haploid cell- Fertilization or syngamy-zygote-diploid cell-meiosis)
	239	252	299	Meiosis reduces chrom. Number fig. 13.5 = 13.6*
	240-241	253	300	The stages of meiotic cell division (fig. 13.6) 233 = 13.7*
	239 then p. 242, 244	253-257	302	Mitosis and meiosis compared fig. 13.7 = 13.8* Fig. 13.9 =13.10* then p. 235 Crossing over fig. 13.9 =13.10*
Information Codes and Genes				
16	79	86	133-134	Fig. 5.25, Nucleic acids
	80,81,82	87	133-134	DNA & RNA, Fig. 5.26 = 5.28* The nitrogen bases

	83	87	133-134	Fig. 5.27 = 5.29*
	82-83	89		Inheritance is based + Fig. 5.28 = 5.30*
	290-292	306, 308, 309	351	"Watson & crick discovered." Figure 16.3, 16.5 -16.6
	293-294	312	357	The term; Semiconservative model Figure 16.7-16.8 (للتوضيح فقط)
	295-298	312-319	360	" A Large team of enzymes " The student should know briefly what is the meaning of the following: (Fig. 16;10, 16.12, 16.13, 16,15,16.16) DNA replication, Origins of replication, Replication fork DNA polymerase, Leading strand, Logging strand DNA Ligase, Primer, Primase Helicase, Okazaki fragments
	304-307	328-331	374 376 376	""Transcription..... (Fig. 17.2-17.4) What is transcription? What is translation? What mRNA & RNA Processing? "In the genetic code...." The term; triplet code The term; template strand
17	304-309	330		"Cracking the code "
	309- 310	330-334		The student should know the following terms briefly). RNA Polymerase (Fig. 17.6,7.7)Transcription Unit Transcription factor
	313	337	385	"Translation is the RNA. ...,"Terms; tRNA, Anticodon (Fig. 17.21 = 23* ,22 = 24*)
	316-320	338-342	385	"Ribosome "Terms; rRNA, p Site, A Site, E Site Briefly what is initiation elongation and termination? (Fig. 17.14 = 17.15* ,15 = 17*,16 = 18*,17 = 19*,19 = 21*)
18	322-325	334-346	390-395	"Point mutation" Fig. (17,21 = 17.23*) The student should know what is. Point mutations Base-pair substitution Missense mutations Nonsense mutation Insertions Deletion Frameshift mutation Mutagens

	325	347		What is the gene briefly the definition in page 316 (Fig 17.23 = 17.25*)
Mendel and the Gene Idea The Chromosomal basis of Inheritance				
19	247-248	262-264	309	Character- trait -true-breeding -hybridization-monohybrid cross p generation-F ₁ , F ₂ generations) By the law of segregation, the two
	250-251	265-266	311	fig. 14.4 table 14.1 242 = 250*
20	251-252	267	313	Some useful genetic vocabulary homozygous- 244 heterozygous-phenotype-genotype The testcross (Fig. 14.6)
	252	268		By the law of independent assortment, each pair.... (and first paragraph in p. 246 = 254* and fig. 14.7b)
21	261	277	321	Genetic diseases (briefly) Recessively inherited disorders
	262	278	323	Cystic fibrosis, Tay-Sachs disease
	262	278	324	Sickle-cell disease, dominantly inh. Disorders
	263-264	279-280		Huntington dis., Multifactorial disorders, heart disease, diabetes, cancer, alcoholism, schizophrenia and manic-depressive disorder.
22	278	289		Sex-linked disorders in humans Page 269 =277* Color blindness Page 270 Hemophilia
	280-282	299-300	336-345	Human disorders due to chromosomal alterations Page 273 =280* Down syndrome, klinefelter syndrome Page 274 Cri du chat
	276	289	345	Sex chromosomes
	277	290	336	The chromosomal basis of sex varies with the organism 269 (and fig. 15.8)
Endocrinology				
23	955		1020-1022	An introduction to regulatory systems
	956			The endocrine system and the nervous fig 45.1

	958			A variety of local regulators affect fig. 46.19
	958-959		1025	Chemical signals bind to specific fig. 45.3,4
	960			Steroid hormones, thyroid fig. 45.5
	960			The vertebrate endocrine fig. 45.6 = 45.45*, tab. 45.1
24	962			The hypothalamus and pituitary fig 45.7 = 45.6* a,b
	962		1030	Posterior pituitary hormones
	964		1031	Anterior pituitary hormones
	964			the pineal gland is
	965		1033	Thyroid hormones function figs. 45. 8,9 = 45.7, 8*
	966		1035	Parathyroid hormone fig.45.10 = 45.9*
	966		1036	Endocrine tissues of the pancreas fig.45.11 = 45.10* 906
	969		1037	The adrenal medulla and Fig.45.15 = 45.14*
	949		1037	Nervous system and hormonal fig. 44.21 a,b = 44.24*
	972		1038	Gonadal steroids regulate fig. 46.14