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جامعة الملك سعود  
كلية العلوم  
قسم علم الحيوان

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**SYLLABUS FOR PREMEDICAL COURSE  
GENERAL ANIMAL BIOLOGY  
ZOO-145**

	Cell type			
	Pages			Subject
	5 <sup>th</sup> edition	6 <sup>th</sup> edition	8 <sup>th</sup> edition	
<b>Lecture 1</b>	105	112	98	A panoramic view of the cell Prokaryotic cells & Prokaryotes
	106	112	98	Fig 7.4 structure of Prokaryotes
	108, 109	114,115	100, 101	Figs. Only (7.7 , 7.8)
	320	329	384	Viral genomes Fig 18.1 sizes Types of genomes , Names of viruses Capsids & Envelopes Capsid & Structure (capsomeres ) Viral envelopes: Origin, structure Bacteriophages
	321	330-331	389	Why virus need host cells: = Ribosome, metabolic enzymes (Fig. 18.2)
<b>Lecture 2</b>	322	331-332	385	Lytic cycle & virulent virus (Fig. 18.4)
	323	332	386	Lysogenic cycle & temperate virus (Fig. 18.4)
	324	332,333, 334	388	Lysogenic cycle Fig. 18.5, structure of viral envelopes.
	325	334	387, 388	Enveloped virus, Fig 18.6 DNA virus (Herpes)
	326	335,336	389	RNA virus Example HIV & Aids + Figure
	504	528	557	Function of prokaryotic cell wall (three Functions)
		528-529	557-559	Gram stain Fig. 27.5 Fig. 27.6* pili
	505	529-530	558-559	Capsule & pili Methods: The gram stain & structures Many prokaryotes are motile. Flagellar action
	506	530	557	Fig. 27.5 Nucleoid region
	532	564	Prokaryotes, nutrition groups: photoautotrophs, Chemoautotrophs, Photoheterotrophs, Chemoheterotrophs, Saprobs, Parasites	

	<b>Cell molecules</b>			
	Pages			Subject
	5 <sup>th</sup> edition	6 <sup>th</sup> edition	8 <sup>th</sup> edition	
<b>Lecture 3</b>	60	64	69	Carbohydrate Monosaccharides Fig. 5.3
	61	65	71	Disaccharides (Fig. 5.4,5.5)
	62	66	72	Polysaccharides Storage poly Fig. 5.6
	63	67	73	Structural poly, Cellulose Fig. 5.7
	65	68-69	74-75	Lipid structure, bonds Fig. 5.10
	66	69	75-76	Triacylglycerol = triglyceride Saturated, unsaturated fatty acids Fig. 5.11
	67	70	76-77	Phospholipids, Structure, Behaviour toward water
	68	71	77-79	Proteins: polypeptide, Amino acids, R group, (Fig.5.15)
		<b>The Cell organelles</b>		
	Pages			Subject
	5 <sup>th</sup> edition	6 <sup>th</sup> edition	8 <sup>th</sup> edition	
<b>Lecture 4</b>	130-135	138-143	125-128	Cell membrane from page (A) Membrane models Fig 8.1,8.2 A & B (B) A membrane is a fluid mosaic of lipids -What is a fluid Fig. 8.3
	107,109	114-117	102-104	Nucleus Fig 7.9, Structure & function of the following a) Nuclear Membrane b) Nuclear Pores c) Nuclear Lamina d) Chromatin e) Nucleolus Ribosomes build a cell's protein ( structure & function), Fig 7.1 0
	111	117, 118		Page 111
<b>Lecture 5</b>	112	118	104-105	Two types of ER, the difference between SER & RER Fig 7.11
	112	119	104-105	Functions of SER, Rough ER & Synthesis of Glycoproteins, Transport vesicles
	113	119	105	Cell membrane, RER
	113, 114	120	105	Structure and Function of Golgi apparatus Fig.7.12
<b>Lecture</b>	114-115	121-122	107	Lysosomes are digestive Fig. 7.13 & 7.14

<b>6</b>				
	117		109-110	Mitochondria structure & function & Fig. 7.17
	119	126	112	The cytoskeleton Fig. 7.21
	120	127	113	Microtubules
	121	128	114	Centrosomes & centriols Fig. 7.22
	121, 122	128,129,130	114-115	Cilia & Flagella Fig. 7.23*, 7.24 & 7.25
	123	130-132	116	Microfilaments Fig.7.27
<b>Enzymes: (Chap 6)</b>				
Pages				Subject
5 <sup>th</sup> edition	6 <sup>th</sup> edition	8 <sup>th</sup> edition		
(91- 97)				Figs. 6.9,6.10,6.12,6.13,6.14, 6.15,6.16,6.17
<b>Lecture 7</b>	91	96	151	Enzymes speed up metabolic reactions by lowering energy barriers (Fig 6.9 6.10) = 6.12, 6.13*
	92	97	153	Enzymes are substrate specific
	93	98	154	The active site is an enz. Catalytic center Fig. 6.12 = 6.15*
	94,95	99-100	155-156	A cell's physical and chemical environment affects enzyme active, cofactor, Enzy inhibitors. (Fig. 6.13, 6.14) = 6.16, 6.17*.
<b>Lecture 8</b>				Metabolic control often depends on allosteric.
	96	101	157	Feedback inhibition, cooperativity (Fig.6.15, 16) = 6.18, 6.19*
	97	101,102	159	The localization of Enz. within a cell (Fig. 6.17) = 6.20*
<b>6. How things get into and out of cells</b>				
Pages				Subject
5 <sup>th</sup> edition	6 <sup>th</sup> edition	8 <sup>th</sup> edition		
<b>Lecture 9</b>	130-135	138-142	125-128	"Membrane models have..." the term; Amphipathic
	132	142	126	Fluid mosaic model
	133	142-144	128-130	"Membranes as Mosaics of structure & Function" Term; integral proteins, peripheral proteins, "carbohydrates and cell to cell recognition" Figure 8.5
<b>Lecture</b>	136	144	131	"Permeability of the lipid Bilayer" "Transport

<b>10</b>				proteins"
	137	145	132	"Passive transport is diffusion. ....," Terms; concentration gradient. Passive transport. "Osmosis is the passive transport. ..." Terms; hypertonic, isotonic.
	138	146-147	133-135	Terms; osmosis, osmoregulation Page 140 The term; facilitated diffusion
	140-141	148-149	135-136	The term; active transport e.g. Sodium-Potassium pump, Figure 8.14 = 8.15*
	142	149-151	136-137	The term; membrane potential, co- transport
	143	151-152	138-139	"Exocytosis & endocytosis. ..." Terms; Phagocytosis, pinocytosis. Receptor-mediated endocytosis (Case study: Familial hypercholesterolemia)
<b>Energy production, cellular Respiration: (Chap 9)</b>				
Pages				Subject
5 <sup>th</sup> edition	6 <sup>th</sup> edition	8 <sup>th</sup> edition		
<b>Lecture 11</b>	147-148	155-156	162-164	Principles of Energy Harvest
	148	156	165	Cells recycle the ATP they use for work. The NAD, NADH (Fig. 9.4)
	152	160, 161	166-167	The Process of cellular Respiration Respiration involves glycolysis (Fig 9.6)
	153	161	167-169	the Krebs cycle, and Election transport an over views Glycolysis harvests chemical energy oxidizing glucose to pyruvate Fig. 9.7).
<b>Lecture 12</b>	156	164	170	The Krebs cycle (Summary of Krebs cycle chemiosmosis Fig. 9.10
	156 157, 158, 159	164,165,166	170, 171, 173, 174, 175	The inner mitochondria, Electron Transport. (Fig. 9.11 show only) Fig. 9.12, Fig. 9.13. Fig. 9.15, Fig. 9.16).
	162-163	167-173	177-180	Chemiosmosis 159) Fig. 9.11. Fermentation (Fig. 9.17, 9.18, 9.19, 9.20).
<b>Chapter 12: The cell cycle Chap. 13: Meiosis and sexual life cycles</b>				
Pages				Subject
5 <sup>th</sup> edition	6 <sup>th</sup> edition	8 <sup>th</sup> edition		
<b>Lecture 13</b>	207-208	216-217	228-230	Cell division distributes identical sets (genome-somatic cells-gametes-chromatin-sister chromatids-centromere-mitosis-cytokinesis- meiosis )
	209		230	The mitotic cell cycle fig. 12.4
<b>Lecture</b>	210-212	218-219	230-232	The stages of mitotic cell division in an animal cell

<b>14</b>				figs.12.5,12.6a
	213	221	234	Cytokinesis divides fig. 12.8
	228-230	236-239	251	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 )
	231	239	252	Meiosis reduces chrom. Number fig. 13.5 = 13.6*
	232-233	240-241	253	The stages of meiotic cell division (fig. 13.6) 233 = 13.7*
	231 then p. 235, 236	239 then p. 242, 244	253-257	Mitosis and meiosis compared fig. 13.7 = 13.8* Fig. 13.9 =13.10* then p. 235 Crossing over fig. 13.9 =13.10*
<b>Lecture 15</b>	<b>Chapter 14: Mendel and the gene idea</b>			
	<b>Chapter 15: The chromosomal basis of inheritance</b>			
	Pages			Subject
	5 <sup>th</sup> edition	6 <sup>th</sup> edition	8 <sup>th</sup> edition	
	240	247-248	262-264	Character- trait -true-breeding -hybridization-monohybrid cross p generation-F1, F2 generations) By the law of segregation, the two
241-242	250-251	265-266	fig. 14.4 table 14.1 242 = 250*	
<b>Lecture 16</b>	243-244	251-252	267	Some useful genetic vocabulary homozygous- 244 heterozygous-phenotype-genotype The testcross (Fig. 14.6)
	245	252	268	By the law of independent assortment, each pair.... (and first paragraph in p. 246 = 254* and fig. 14.7b )
<b>Lecture 17</b>	253	261	277	Genetic diseases (briefly) Recessively inherited disorders
	254	262	278	Cystic fibrosis, Tay-Sachs disease
	255	262	278	Sickle-cell disease, dominantly inh. Disorders
	255	263-264	279-280	Huntington dis., Multifactorial disorders, heart disease, diabetes, cancer, alcoholism, schizophrenia and manic- depressive disorder.
<b>Lecture 18</b>	270	278	289	Sex-linked disorders in humans Page 269 =277* Color blindness Page 270 Hemophilia
	272	280-282	299-300	Human disorders due to chromosomal alterations Page 273 =280* Down syndrome, klinefelter syndrome Page 274 Cri du chat
	268	276	289	Sex chromosomes
	268-269	277	290	The chromosomal basis of sex varies with the organism 269 (and fig. 15.8)

	<b>9. Information codes and genes (Three lectures)</b>			
	Pages			Subject
	5 <sup>th</sup> edition	6 <sup>th</sup> edition	8 <sup>th</sup> edition	
<b>Lecture 19</b>	76	79	86	Fig. 5.25, Nucleic acids
	77	80,81,82	87	DNA & RNA, Fig. 5.26 = 5.28* The nitrogen bases
	78	83	87	Fig. 5.27 = 5.29*
	78, 79	82-83	89	Inheritance is based + Fig. 5.28 = 5.30*
	281-283	290-292	306, 308, 309	"Watson & crick discovered." Figure 16.3, 16.5 - 16.6
	284-285	293-294	312	The term; Semiconservative model Figure 16.7- 16.8 (للتوضيح فقط)
<b>Lecture 19</b>	286-289	295-298	312-319	" 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
	296-298	304-307	328-331	""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
<b>Lecture 20</b>	298-299	304-309	330	"Cracking the code "
	300-301	309- 310	330-334	The student should know the following terms briefly). RNA Polymerase (Fig. 17.6,7.7)Transcription Unit Transcription factor
	304	313	337	"Translation is the RNA. ..,"Terms; tRNA, Anticodon (Fig. 17.21 = 23* ,22 = 24*)
	306-310	316-320	338-342	"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*)

<b>Lecture 21</b>	312-313	322-325	334-346	"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
	316	325	347	What is the gene briefly the definition in page 316 (Fig 17.23 = 17.25*)
<b>Lecture 22</b>	<b>Chemical signals in animals</b>			
	Pages			Subject
	5 <sup>th</sup> edition	6 <sup>th</sup> edition	8 <sup>th</sup> edition	
	893	955		An introduction to regulatory systems
	894	956		The endocrine system and the nervous fig 45.1
	895-896	958		A variety of local regulators affect fig. 46.19
<b>Lecture 23</b>	896	958-959		Chemical signals bind to specific fig. 45.3,4
	897	960		Steroid hormones, thyroid fig. 45.5
	899	960		The vertebrate endocrine fig. 45.6 = 45.45*, tab. 45.1
	900	962		The hypothalamus and pituitary fig 45.7 = 45.6* a,b
	900	962		Posterior pituitary hormones
	902	964		Anterior pituitary hormones
<b>Lecture 24</b>	902-903	964		the pineal gland is
	903-904	965		Thyroid hormones function figs. 45. 8,9 = 45.7, 8*
	904	966		Parathyroid hormone fig.45.10 = 45.9*
	904-906	966		Endocrine tissues of the pancreas fig.45.11 = 45.10* 906
	907-909	969		The adrenal medulla and Fig.45.15 = 45.14*
<b>Lecture 24</b>	887	949		Nervous system and hormonal fig. 44.21 a,b = 44.24*
	910	972		Gonadal steroids regulate fig. 46.14

### **Evaluation and Assessment**

	<b>Activities</b>	<b>Grade</b>
<b>1</b>	<b>First midterm exam</b>	<b>15%</b>
<b>2</b>	<b>Second midterm exam</b>	<b>15%</b>
<b>3</b>	<b>Practical</b>	<b>30%</b>
<b>4</b>	<b>Final Examination</b>	<b>40</b>
	<b>Total</b>	<b>100</b>

For more details about course specifications, please visit:  
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