

CREDIT/CONTACT HOURS: 3 credits (3-0-0)

DELIVERY MODE(S): Classes: Monday 1000-1120 (J228)
Wednesday 1000-1120 (J228)

TRANSFERABILITY:

Please refer to the ACAT transfer guide for transferability details.

EVALUATIONS:	Mid-term Exam I	25%
	Mid-term Exam II	25%
	Assignments	10%
	<u>Final Exam</u>	<u>40%</u>
	Total	100%

GRADING CRITERIA:

GRANDE PRAIRIE REGIONAL COLLEGE			
GRADING CONVERSION CHART			
Alpha Grade	4-point	Percentage	Designation
A ⁺	4.0	90 – 100	
A	4.0	85 – 89	
A ⁻	3.7	80 – 84	
B ⁺	3.3	77 – 79	
B	3.0	73 – 76	
B ⁻	2.7	70 – 72	
C ⁺	2.3	67 – 69	
C	2.0	63 – 66	
C ⁻	1.7	60 – 62	
D ⁺	1.3	55 – 59	
D	1.0	50 – 54	
F	0.0	0 – 49	FAIL
WF	0.0	0	FAIL, withdrawal after the deadline

** Grade of D or D+ may not be acceptable for transfer to other post-secondary institutions. Students are cautioned that it is their responsibility to contact the receiving institutions to ensure transferability

STUDENT RESPONSIBILITIES:

Students are expected to attend **all** classes, seminars and laboratory sessions. All assignments must be completed in full and handed in by the date specified. Refer to the College Policy on Student Rights and Responsibilities at https://www.gprc.ab.ca/about/administration/policies/#academic_policies

STATEMENT ON PLAGIARISM AND CHEATING:

Cheating and plagiarism will not be tolerated and there will be penalties. For a more precise definition of plagiarism and its consequences, refer to the Student Conduct section of the College Admission Guide at <http://www.gprc.ab.ca/programs/calendar/> or the College Policy on Student Misconduct: Plagiarism and Cheating at <http://www.gprc.ab.ca/about/administration/policies/>

**Note: all Academic and Administrative policies are available on the same page.

Topic		3 rd Edition pages	4 th Edition pages
1. Biological Molecules			
	Types of biomolecules	3-6	3-6
	Biopolymers	6-10	6-9
	Nucleosides and nucleotides	52-55	52-55
	Basic structure of DNA and RNA	56-61	56-61
	Functions of Nucleic acids (Central Dogma)	61-65	61-64
2. Protein Structure and Function			
	Overview	87-88	85
	Amino acids	89-91	86-90
	Peptide bonds and primary structure	91-96	90-94
	Secondary structures	96-99	94-97
	Tertiary structure and stabilization	99-104	97-101
	Protein folding & Quarternary structure	104-108	101-106
	Oxygen binding to myoglobin and haemoglobin	122-133	120-129
3. Lipids and Biological Membranes			
	Fatty acids, triacylglycerols and membrane lipids	220-227	215-222
	Lipid bilayers and membrane fluidity	227-230	222-225
	Membrane proteins	230-233	225-228
	Fluid Mosaic Model	233-234	228-229
	Passive & Active membrane transport	246-255	240-248
4. Enzymes			
	What is an enzyme?	158-161	154-157
	Classifying enzymes	161-162	157-158
	Co-enzymes and dietary vitamins	54-55; 320-322	54-55; 312-314
	Catalytic mechanisms	162-171	158-166
	Substrate binding	171-174	166-171
	Enzyme kinetics	188-198	183-192
	Enzyme inhibition	200-209	194-200
	Allosteric enzymes	209-211	200-203

	Other <i>in vivo</i> regulatory mechanisms	211	203
	Co-enzymes and roles as electron carriers	316-317	308-309
5. Introduction to Metabolism			
	Energy and metabolism	10-14	10-14
	Food and Fuel	308-311	301-303
	Storage and use of fuels	312-314	304-306
	Metabolic pathways and common intermediates	314-316	306-308
	Oxidation and reduction	316-317	308-309
	Overview of metabolism	318-320	310-312
	Free energy changes in metabolic reactions	323-325	314-316
	Energy currency, ATP, coupled reactions	325-330 Fig 3-3a	316-321 Fig 3-2a
6. Glucose Metabolism			
	Introduction	290-294, 359 338-33	283-287; 349; 329
	Glycolysis	339-350	330-340
	Fates of Pyruvate	350-354	341-344
	Anaerobic exercise and the Cori Cycle	513-514	499-500
	Gluconeogenesis and Glycogen metabolism	354-359	344-349
	Pentose phosphate pathway	361-363	350-352
	Summary of glucose metabolism	363-364	352-353
	Hormonal regulation	515-518; 277-280; 522-523	501-505; 270-273; 509-510
7. Citric Acid Cycle and Oxidative Phosphorylation			
	Introduction	370-371	362
	Conversion of pyruvate to acetyl-CoA	371-374	362-365
	Reactions of the Citric Acid Cycle	374-381	365-372
	Regulation of the Citric Acid Cycle	381-382	372-373
	Catabolism, anabolism and anapleurotic reactions	384-388	374-378
	Overview of oxidative phosphorylation	394-395	385
	Mitochondria and Electron transport chain	399-408	390-399
	Chemiosmosis	408-410	399-401
	ATP synthase	410-414	401-405
	ATP yield from aerobic catabolism of glucose	380-381	372

8. Metabolism of Fats, Fatty Acids and Cholesterol			
Overview of fat metabolism	Fig. 17-4	Fig. 17-4	
Transport of lipids	443-444	432-434	
TAG synthesis	463-465	452-454	
Lipases and TAG breakdown	445	435	
Degradation of fatty acids (activation & transport)	445-446	435-436	
Degradation of fatty acids (β -oxidation)	446-453	436-443	
Glyoxylate cycle	386	377	
Fatty acid synthesis	453-459	443-449	
Regulation of fatty acid metabolism	459-460	449-450	
Fat metabolism and diabetes	522-524	509-511	
Ketone bodies and ketogenesis	461-462	450-452	
Cholesterol synthesis and regulation	466-467	454-457	
Fates of cholesterol	467-467		
“Good” and “Bad” cholesterol	458 Box 17A		