



# **Course Outline**

**BIOC2101**

**Principles of Biochemistry  
(Advanced)**

**School of Biotechnology and Biomolecular Sciences**

**Faculty of Science**

**Term 2, 2021**

**Welcome Message from the Course Convenor**







**Major Topics  
Covered**

## **CARBOHYDRATE CATABOLISM AND STORAGE**

### **Carbohydrate catabolism I – Learning Outcomes:**

**Explain what carbohydrates are**

**Explain how monosaccharides are classed (number of carbons, aldose/ketose etc).**

**Explain the terms stereoisomer/ epimer/ diastereomer**

**Give an example of a disaccharide and explain the role of the glycosidic bond**

**Oxidative Phosphorylation - Learning Outcomes:**

**Outline the chemiosmotic theory**



**Describe the first committed step in fatty acid synthesis.**  
**Describe the structure and function of the fatty acid synthase complex**  
**Outline the overall stoichiometry of palmitate synthesis.**  
**Briefly explain why and how fatty acids can be modified**  
**Compare and contrast the main features of  $\beta$ -oxidation and fatty acid synthesis.**  
**Briefly describe the main mechanisms of control of fatty acid metabolism**

### **INTEGRATION OF METABOLISM**

#### **Hormonal control of Fuel Metabolism- Learning Outcomes:**

**Discuss the role of glucose transporters and comment on the differences between the various isoforms.**  
**Describe the structure of receptor tyrosine kinases, using the insulin receptor as an example.**  
**Outline the role of insulin on the liver; skeletal muscle and adipose tissues in the fed state.**  
**Outline the role of glucagon on the liver in the fasted state.**  
**Outline the role of adrenaline on the liver; skeletal muscle and adipose tissues.**

#### **Metabolic Specialisation of Tissues - Learning Outcomes:**

**Describe how different glucose transporters confer tissue-specificity**

## 4 Rationale and Strategies Underpinning the Course

### Teaching Strategies

Course content is initially presented in lectures. Key concepts from the lectures are incorporated into online laboratory sessions, where students also learn a laboratory techniques and safe workplace skills. Students are provided with avenues for revision, practice, and discussion of the

## **5 BIOC2101 Course Schedule T2 2021**

## 6 Assessment Tasks & Feedback

Task	Knowledge & abilities assessed	Assessment format and/or criteria	%	Date	Feedback		
					WHO	WHEN	HOW

**BABS  
Health and  
Safety Quiz**

## 7. Additional Resources and Support

<b>Text Book</b>	Biochemistry 9 <sup>th</sup> edition, W.H. Freeman and Company, 2019 J.M. Berg, J.L. Tymoczko, G.J. Gatto, and L. Stryer Availability: UNSW Bookshop UNSW Library: Open Reserve/High use collection
<b>Course Manual</b>	All BIOC2101 course information including course outline, assessment schedule and practical information is available via Moodle.
<b>Recommended Internet Sites</b>	All students enrolled in BIOC2101 automatically have access to the course Moodle site <a href="https://moodle.telt.unsw.edu.au/">https://moodle.telt.unsw.edu.au/</a> . This site will be used to distribute course notes and information and should be checked at regular intervals. Specifically, the Moodle site will be used to provide: <ul style="list-style-type: none"> <li>Important course announcements</li> <li>Assessment marks</li> <li>Practical notes</li> <li>Lecture handouts and recordings</li> <li>Information about examination arrangements</li> <li>Further assessment information resulting from special consideration</li> <li>Self directed learning resources</li> </ul> <p>There are also many computer exercises and teaching aids available to students enrolled in BIOC2101 Principles of Biochemistry (Advanced). Links to the textbook companion websites (if available) and additional online animations and revision tutorial can be found on the course Moodle site.</p>
<b>Study Spaces</b>	These are student common areas for study or relaxation on the ground floor of the Biological Sciences Building E26 and in the UNSW Library.

## 8 Required Equipment, Training and Enabling Skills

<b>Equipment Required</b>	To access live online BIOC2101 lectures and online lab classes (if enrolled), students will need <ul style="list-style-type: none"> <li>A computer equipped with Microsoft Teams and an internet browser</li> <li>For assistance with online learning please see the UNSW 'Transitioning to Online Learning' website: <a href="https://www.covid19studyonline.unsw.edu.au/">https://www.covid19studyonline.unsw.edu.au/</a></li> </ul> <p>To all face-to-face lab classes (if enrolled), please bring</p> <ul style="list-style-type: none"> <li>Disposable face mask</li> <li>Personal protection equipment (PPE): safety glasses, lab coat &amp; closed shoes</li> <li>Calculator</li> <li>Timer (e.g. watch)</li> </ul>
<b>Enabling Skills Training Required to Complete this Course</b>	Students should aim to complete the BABS Health and Safety Quiz (online) BEFORE their first lab class in Week 1. It is also recommended that students complete individual pre-laboratory quizzes (where appropriate) prior to each practical class (accessed via Moodle).

## 9 Course Evaluation and Development

<b>My Experience</b>	<p>Students can provide feedback on the course via online myExperience surveys, as instructed, in the final week of term</p> <p>The latest information on how student feedback has been used to update and improve the course can be found on the Moodle site for the course.</p>
----------------------	---

## 10 Administration Matters

### Expectations of Students

#### ATTENDANCE:

In T2/2021, compulsory attendance is only required for your weekly laboratory classes and all examinations (Term Quiz, Practical Quiz, and Final Exam). If you miss a laboratory class or examination due to illness or misadventure, you must apply for Special Consideration with appropriate supporting documentation within 3 days. If you miss more than one laboratory class without adequate supporting documentation, you may not be eligible for passing the course. Attendance at 'live' lectures (conducted via MS Teams) is highly recommended but not compulsory, as these sessions will also be recorded and available for asynchronous viewing.

#### PRE-LAB QUIZZES:

Students are encouraged to complete a pre-lab quiz prior to each weekly laboratory class (where available). Pre-lab quizzes can be accessed via Moodle. Although the completion of pre-lab quizzes is not compulsory, it is highly recommended because it will help you to prepare for and get the most out of each online laboratory class. Pre-lab quizzes will also help you prepare for the Practical Quiz in Week 9 (worth 20% of final course mark).

#### PRACTICAL SKILLS AND DATA RECORDING:

In some face-to-face practical classes, the demonstration of specific laboratory skills and/or the collection of raw data results will need to be checked and confirmed by your Demonstrator or Course Convenor. TT aw a T nements will bd m d d e a e a.

ifis stcaT e,

If you are unable to submit any component of the BIOC2101 Laboratory Report by the scheduled deadlines, you must email the Course Convenor AND apply for Special Consideration following the guidelines provided on the following page or in Moodle. PLEASE NOTE that due to the automated online nature of the peer review component of the report assignment, failure to submit a component on time may result in the need for you to complete an alternative assignment.

**SATISFACTORY LABORATORY PERFORMANCE:**











## **12 Practical Information**





## **SAFETY IN HANDLING LABORATORY CHEMICALS**

### **PIPETTING**

Essentially all hazardous solutions (acids, alkalis, toxic solutions etc.) that are needed in the practical class will be provided in dispensers which will be set to deliver the correct volume.

For all other pipetting pipetting aids such as Gilson Pipetmans or Eppendorf's will be provided for use during classes. These should be returned to the appropriate stands in class immediately after use.

### **BROKEN GLASSWARE AND OTHER SHARP OBJECTS**

Should any breakage of glassware occur; the fragments must be swept up immediately and placed in the special bins provided for glass. These bins are located at the front of each laboratory and are clearly marked 'BROKEN GLASS ONLY'. Other sharp objects e.g. needles or razor blades should be placed in the yellow 'Sharps' Bins located on each benchtop. Broken glass or other sharp objects **MUST NOT** be placed in the waste paper bins or in any other bins, under any circumstances.

### **DISPOSAL OF "CLINICAL" WASTE**

Special labeled enamel or plastic containers are available on each laboratory bench for the disposal of gloves, gels, tips, microcentrifuge tubes, and any other used disposable plastic ware or Glad Wrap. Never; ever put this material in the normal domestic waste bins.

### **DISPOSAL OF CHEMICAL (LIQUID) WASTE**

According to the Environmental Policy of the University no chemical waste may be disposed of down the laboratory sinks.

All chemical waste must be placed in the appropriate labeled containers which must