

SUBJECT OUTLINE



Subject Name:

Introduction to Health Sciences

Subject Code:

BIOH011

SECTION 1 - GENERAL INFORMATION

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|-----------------------------|---------------------------------|------------------------------------|-----|---------------|-----|
| Award/s: | Non-award | Total Course Credit Points: | N/A | Level: | N/A |
| Duration: | 1 Semester | | | | |
| Subject Coordinator: | Dr Avni Pepe (Melbourne campus) | | | | |
| Subject is: | Elective | Subject Credit Points: | N/A | | |

Student Workload:

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|---------------------------------------|---|------------------------------|
| No. timetabled hours per week: | No. personal study hours per week: | Total hours per week: |
| 3 | 2 | 5 |

Delivery Mode:

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| Face to Face (On campus) | 1 x 2 hour lecture | 1 x 1 hour tutorial and practical activities |
| e-Learning (Online) | Narrated PowerPoint presentations Tutorials: Asynchronous tutor moderated discussion forum and activities Student handouts, web-based resources | |
| Intensive Delivery (Summer School) | Contact hours are delivered over 3 weeks with 2 x 6.5 hour days delivered per week Content: Week 1 - Sessions 1-6; Week 2 - Sessions 7-9; Week 3 - Sessions 10-13 Assessment: Study Skills Plan & Reflection – Weeks 1 & 4; Online Quiz – Week 2; Online Short Answer Questions – Weeks 2, 3 & 4 | |
| | Full Time | |
| | Part Time | |
| Pre-requisites: | Nil | |
| Co-requisites: | Nil | |

SECTION 2 – ACADEMIC DETAILS

Subject Rationale

This subject will explain some general biology-related study skill strategies and provide students with an introduction to the gross anatomy and physiology of the human body. The subject will explore chemistry needed for life, the structure and function of cells and basis of genetics and inheritance. The emphasis on understanding the cellular level will be used as foundation knowledge for studies into other levels of organisations – from tissues to systems. The systems covered in this subject include integumentary, musculoskeletal, nervous, endocrine, cardiovascular, respiratory, immune, digestive, urinary and reproductive systems.

Learning Outcomes

1. Identify a variety of study skills strategies that can be used to formulate a personalised approach to health science studies.
2. Identify the body's main functional chemistry and broadly describe the pathways from which they are derived.
3. Define the structure and function of cells and tissues.

4. Describe the gross anatomy of major organ systems of the human body, including integumentary, musculoskeletal, nervous, endocrine, cardiovascular, respiratory, immune, digestive, urinary and reproductive systems.
5. Describe the main physiological function(s) of major organ systems.

Assessment Tasks

| Type | Learning Outcomes Assessed | Session Content Delivered | Due | Weighting |
|--|----------------------------|---------------------------|----------------------|------------------|
| Study Skills Plan & Reflection (2 x 300 words) | 1 | 1 | Weeks 2 & 15 | 20% (2 x 10%) |
| Online Quiz | 2-3 | 3-6 | Week 7 | 20% |
| Online Short Answer Questions (3 x 500 words) | 4-5 | 7-9, 10-11 & 12-13 | Weeks 10, 12 & 14 | 60% (3 x 20%) |
| All written assessments and online quizzes are due at 11:55 p.m. and submitted through the LMS | | | | |

Prescribed Readings:

1. Chiras, D. D. (2000). *Essential study skills for science students*. Pacific Grove, CA: Brooks/Cole.
2. Summers, J., & Smith, B. (2014). *Communication skills handbook* (4th ed.). Milton, QLD: Wiley. [ebook available]
3. Tortora, G. J., & Derrickson, B. (2012). *Introduction to the human body: The essentials of anatomy and physiology* (9th ed.). Hoboken, NJ: John Wiley & Sons

Recommended Readings:

1. Alberts, B., Johnson, A., Lewis, J., Raff, M., Roberts, K., & Walter, P. (2008). *Molecular biology of the cell* (5th ed.). New York, NY: Garland Science.
2. Marieb, E. N. (2012). *Essentials of human anatomy and physiology* (12th ed.). San Francisco, CA: Benjamin Cummings.
3. Tortora, G. J., Derrickson, B., Burkett, B., Peoples, G., Dye, D., Cooke, J., Mellifont, R. (2019). *Principles of anatomy and physiology* (2nd Asia-Pacific ed.). Milton, QLD: Wiley.

Subject Content

| Week | Lectures | Tutorials / Practicals |
|------|---|---|
| 1. | Introduction (Subject Outline / Subject Aims / Assessment / Teaching Resources) Biology Study Skills <ul style="list-style-type: none"> • Study strategies in biology | <ul style="list-style-type: none"> • Discussion: What study strategies do you use for studying |
| 2. | Language of Biology, Homeostasis and Health <ul style="list-style-type: none"> • Anatomy and physiology • Basic life functions • Prefixes and suffixes • Anatomical position • Directional and regional terms • Levels of structural organisation • Homeostasis • Physical dimension of health | <ul style="list-style-type: none"> • Picture-language association module • Tutorial: Practice the language of biology using prefixes and suffixes • Homeostasis, health and disease – example of stress response |
| 3. | Life Chemistry <ul style="list-style-type: none"> • Inorganic compounds (water, salt, acid, base) | <ul style="list-style-type: none"> • Tutorial: Understand how chemistry is used by the body; models of molecules |

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| | <ul style="list-style-type: none"> Organic compounds (protein, carbohydrates, lipids, nucleic acids) Energy molecules (ATP and NADPH) | <ul style="list-style-type: none"> Discussion: Linking chemistry with biology |
| 4. | Cells <ul style="list-style-type: none"> What are cells and why do we have them? Basic anatomy and physiology of a generalised cell | <ul style="list-style-type: none"> Fluorescent microscopy: Insight into the anatomy of a cell – video resource Fluorescent microscopy: Examples of specialised cells – video resource Discussion: Relating structure to function of specialised cells |
| 5. | Genetics <ul style="list-style-type: none"> DNA and RNA: Molecules of genetics Definition of gene as a hereditary unit Gene-protein link Inheritance of traits | <ul style="list-style-type: none"> Tutorial: What are they and why do we have genes?; model of DNA and RNA molecules; genetics and inheritance Discussion: Why can you have different colour eyes from your parents?; Human Genome project – why should you care?; what is epigenetics? |
| 6. | Tissues and Integumentary System <ul style="list-style-type: none"> Four principal tissue types structure and function Integumentary system gross anatomy and physiology | <ul style="list-style-type: none"> Fluorescent microscopy: Insight into the anatomy of tissue – video resource Skills teaching: How to answer multichoice questions and practice quiz |
| 7. | Musculoskeletal System and Movement <ul style="list-style-type: none"> Bone cells function Skeletal system gross anatomy and physiology Muscle cell function Muscular system gross anatomy and physiology Movement - principal function of the musculoskeletal system | <ul style="list-style-type: none"> Tutorial: Understanding specialised cells; use of virtual technologies to learn anatomy of musculoskeletal system and visualise specific movement |
| NON-TEACHING WEEK (note that make-up classes may be scheduled in this week) Semester 1 - This aligns with the week after Easter so it may fall between Weeks 6 to 8 Semester 2 & Online students - The non-teaching week falls between Weeks 7 and 8 | | |
| 8. | Nervous System <ul style="list-style-type: none"> Nerve cell gross anatomy and function Neurotransmitters as messengers Gross anatomy and physiology of nervous system – CNS, PNS, ANS and ENS | <ul style="list-style-type: none"> Tutorial: Use of virtual technologies to understand the nervous system; highways of information regulated by the nervous system Skills teaching: How to answer short answer questions Discussion: How is nervous system involved in homeostasis? |
| 9. | Endocrine System <ul style="list-style-type: none"> Hormones as messengers Gross anatomy of endocrine system Introduction to axis and humoral (direct) regulation | <ul style="list-style-type: none"> Tutorial: Humoral vs axis regulation examples Discussion: How is endocrine system involved in homeostasis? |
| 10. | Cardiovascular and Respiratory Systems <ul style="list-style-type: none"> Blood cells: Red blood cells (RBC) Gross anatomy of cardiovascular system Gross anatomy of respiratory system Body's oxygen supply – overarching function of CV and respiratory systems | <ul style="list-style-type: none"> Tutorial: Understanding anatomy of the heart and blood vessels and flow of oxygenated vs non-oxygenated blood |
| 11. | Immunity <ul style="list-style-type: none"> Blood cells: White blood cells (WBC) Immune cells: B cells and T cells | <ul style="list-style-type: none"> Tutorial: Overview of the immune response Discussion: Immune response and inflammation; linking neuro, endocrine and immune systems |

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| | <ul style="list-style-type: none"> Immune response types as body defences | |
| 12. | Digestive System <ul style="list-style-type: none"> Gross anatomy of digestive system Food metabolism | <ul style="list-style-type: none"> Tutorial: Use of virtual technologies to understand the digestive system Discussion: How is digestion linked to energy production? |
| 13. | Urinary and Reproductive Systems <ul style="list-style-type: none"> Gross anatomy and physiology of urinary system Gross anatomy and physiology of reproductive systems | <ul style="list-style-type: none"> Tutorial: Use of virtual technologies to understand the anatomy of urinary and reproductive systems Discussion: Fluid, electrolyte and acid-base balance and cardiovascular system |
| 14. | Non-Teaching Week/Practical Examination Week 1 Note that make-up classes may be scheduled in this week | |
| 15. | Non-Teaching Week/Practical Examination Week 2 Note that make-up classes may be scheduled in this week | |
| 16. | Final Examination Week 1 There is no final exam for this subject | |
| 17. | Final Examination Week 2 There is no final exam for this subject | |