# Year 11 – General Human Biology

This course is developed using the WA Curriculum as a guide. The order of the content and the time in which they are covered are only a guide. Circumstances may result in changes during the year. Kambalda West District High School reserves the right to alter the order the objectives are taught and time over which they are taught.

Students relate the structure of the different body systems to their function and understanding the interdependence of these systems in maintaining life. Reproduction, growth and development of the unborn baby are studied to develop an understanding of the effects of lifestyle choices. Students understand the need for advances in science in order to discover new knowledge about human biology. They become responsible citizens who are able to evaluate risks, ethical concerns and benefits to make informed decisions about matters relating to lifestyle and health issues.

## Vocabulary & Grammar

Below is a list of science words and phrases that students should know: the meaning of; and be able to spell; by the end of term:

| **Term 1** | **Term 2** | **Term 3** | **Term 4** |
|---|---|---|---|
| Hypothesis | Absorption | Alleles | Embryo |
| Observation | Activation energy | Anaphase | Zygote |
| Independent variable | Amino acids | Autosome | Amniotic sac |
| Dependent variable | Amylase | Chromatin | Blastocyst |
| Control variable | Calcium | Chromosome | Caesarean |
| Alveoli | Catabolic reaction | Co-dominant | Fertilisation |
| Aorta | Digestion | Complementary base pair | Foetus |
| Arteries | Dialysis | Cytokinesis | Haemorrhaging |
| Blood | Elimination | Diploid | Chlamydia |
| Bronchi | Enzyme | Haploid | Herpes |
| Bronchioles | Fat | Gametes | AIDS |
| Capillaries | Fibre | DNA | Gonorrhoea |
| Carbon Dioxide | Ingestion | Homozygous | Pubic lice |
| Diaphragm | Inhibitor | Heterozygous | Virus |
| Circulation | Lipase | Genotype | Bacteria |
| Heart rate | Lock and key model | Phenotype | Parasite |
| Inferior vena cava | Protease | Gene | Condom |
| Inhalation | Pepsin | Interphase | IVF |
| Exhalation | Reabsorption | Metaphase | GIFT |
| Atrium | Sodium | Meiosis | ZIFT |
| Ventricle | Urine | Mitosis | FET |
| Pulmonary veins | Urea | Placenta | |
| | Vitamins | | |

There is an expectation that students will make every effort to correctly use capitals, full stops, commas, semi colons, apostrophes, question marks and exclamation marks.

COURSE OUTLINE 2022

SUBJECT YEAR 1

**Semester 1 – UNIT 1**

UNIT Description
Healthy Body study using science inquiry skills of the following topics: characteristics of life, body organisation, respiratory system, circulatory system, digestive system, nutrition and diet and the urinary system

| Week | Topics/Syllabus | Assessment | Resources |
|---|---|---|---|
| | **Term 1** | | |
| 1 | **Science inquiry skills**<br>- Research, write hypothesis and predict outcomes<br>- Design investigations (materials, data, risk assessment, and ethics)<br>- Represent and organise data<br>- Communicate using appropriate science language<br>- Interpret scientific texts | | |
| 2 | **Characteristics of life**<br>- MRS GREN<br>- Cell theory<br>- Structure and function of cell components (nucleus, mitochondria, ribosomes, lysosomes and cytoplasm)<br>- Observe cell components under microscope using microscope techniques<br>- Create appropriate representations of the organs within the system<br>- Understanding human body at a cellular level enhanced through advances of microscopes | | |
| 3 | - Structure and function of the cell membrane<br>- Transport across the cell membrane; diffusion, osmosis, endo and exocytosis (passive and active)<br>- Aerobic and anaerobic respiration<br>**Body organisation**<br>- Hierarchal structure of cells, tissues, organs and systems | | |
| 4 | **Respiratory system**<br>- Structure and function of the respiratory system | **Task 1:** Model of a cell | |
| 5 | - Factors for efficient gas exchange (large SA:V, thin, moist and vascular)<br>- Mechanics of breathing | | |
| 6 | - Diseases and lifestyle choices that affect the respiratory system and compromise body functioning (long and short term)<br>- Diagnosis and treatment of those conditions due to system or organ failure (includes drugs, physical therapy, radiation and surgery/transplant) | | |
| 7 | **Circulatory system**<br>- Structures and functions of circulatory system (heart and blood vessels)<br>- Create appropriate representations of the organs within the system<br>- Structure and function of the components of blood (plasma, red blood cells, white blood cells and platelets) | | |

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|---|---|---|---|
| 8 | - Efficient transport from exchange surfaces (lungs, digestive system, kidney and cells)<br>- Conduct experiment that monitors heart rate and blood pressure and how those relate to bodily functions<br>- Represent the data collected in a meaningful way that communicates to a specific audience | | |
| 9 | - Effects of cardiovascular disease on the circulatory system<br>- Use of scientific texts to make claims and draw conclusions<br>- Other diseases, lifestyle choices and conditions of the circulatory system that compromise functioning of the body | **Task 2**: Respiratory and circulator systems test | |
| 10 | **Digestive System**<br>- Structures and functions of the digestive system | | |
| **Term 2** | | | |
| 1 | - Mechanical digestion<br>- Chemical digestion (amylase, protease and lipase) | | |
| 2 | - What are enzymes<br>- Digestive enzymes and their functions (names, places made, conditions required and chemicals involved)<br>- Factors affecting enzymes | **Task 3**: Enzyme investigation | |
| 3 | - Absorption<br>- Elimination<br>- Diseases, lifestyle choices and conditions of the digestive system that compromise digestion and absorption of food | | |
| 4 | - What is a healthy diet?<br>- Malnutrition<br>- Main nutrient groups and their uses in the body (carbohydrates, proteins, fats, vitamins and minerals, water)<br>- evaluate texts on nutrition and diet<br>- construct scientific arguments using evidence about nutrition and diet | **Task 4:** Fad diets vs. Healthy diet extended response or scenario and recommended diet extended response | |
| 5 | **Urinary System**<br>- Structures and functions of the urinary system | | |
| 6 | - What is toxic nitrogenous waste and how it is removed in detail | | |
| 7 | - Maintain water balance by working with other organs/systems (including the digestive system, the skin and lungs) | | |
| 8 | - Dysfunctions of the kidney and the effect of this on the body<br>- Treatments of kidney dysfunctions (dialysis and transplants) | **Task 5**: Digestive and urinary systems test | |
| **END OF SEMESTER 1** | | | |

**Semester 2 – UNIT 2**

Unit Description

Study of reproduction including: genetic material, cell division, reproductive system, pregnancy, reproductive technologies, sexually transmitted infections

| Week | Topics/Syllabus | Assessment | Resources |
|---|---|---|---|
| **Term 2** | | | |
| 9 | **Genetic Material**<br>- DNA structure and functions<br>Construct appropriate representations of DNA to communicate conceptual understanding | | |
| 10 | Define chromosomes, genes and alleles and their relation to each other | | |
| **Term 3** | | | |
| 1 | **Cell Division**<br>- Mitosis (sequence of events and characteristics of daughter cells)<br>- Mitosis under the microscope<br>- Factors that affect mitosis | | |
| 2 | - Meiosis (sequence of events and characteristics of daughter cells)<br>- Meiosis under the microscope<br>- Comparison between meiosis and mitosis<br>- | **Task 6**: DNA/Cell division model | |
| 3 | **Reproductive Systems**<br>- Structures and functions of the male and female reproductive systems<br>- Create appropriate representations of the organs within the system | | |
| 4 | - Male and female production of gametes via spermatogenesis and oogenesis<br>- Relate these processes to mitosis and meiosis<br>- Hormones involves in male and female reproduction (testosterone, Oestrogen) | | |
| 5 | - Menstrual and ovarian cycles of females<br>- Hormones that facilitate these cycles (FSH, progesterone and LH) | | |
| 6 | - Fertilisation<br>- Full picture consolidation from gamete production to fertilisation | **Task 7:** DNA and reproductive systems test | |
| 7 | **Pregnancy**<br>- Purpose of fertilisation (2N chromosomes)<br>- Implantation and placenta formation<br>- Sequence of gametes→zygote→embryo→ foetus | **Task 8:** Rat Reproductive system dissection scientific report | |
| 8 | - Embryo and foetal development stages<br>- Mothers characteristics during the trimesters<br>- Monitoring foetal development<br>- Asses advantages and disadvantages of monitoring techniques using scientific data<br>- Ethical discussion about abortion | | |
| 9 | - Sequence of events involved in birth<br>- Advantages and disadvantages of different types of birthing methods (home, water and hospital)<br>- Complications during pregnancy (placenta and umbilical cord) | **Task 9:** Alcohol and smoking during pregnancy extended response | |

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|---|---|---|---|
| 10 | - Research and interpret scientific texts to draw conclusions about the effects of diet, smoking, drinking and drugs on the baby and the mother<br>- Construct appropriate representations of that research to communicate it to a specific audience | | |
| **Term 4** | | | |
| 1 | **Reproductive Technologies**<br>- Causes of infertility in males and females<br>- Infertility treatments (IVF, GIFT, ZIFT and FET) | | |
| 2 | - Ethical considerations and scenarios surrounding infertility treatments<br>- Parental testing for disorders (genetics, disorders) | | |
| 3 | **Contraception**<br>- Methods of contraception (STI and/or pregnancy)<br>- Advantages and disadvantages of contraception | **Task 10:** Pregnancy, Birth and infertility test | |
| 4 | **Sexually Transmitted Infections**<br>- Methods of transmission<br>- Causes (bacteria, viral, fungi or parasitic)<br>- Symptoms or lack of timing when appear<br>- Treatment methods, if available | **Task 11:** Safe sex practices extended response | |
| 5 | - Interpret scientific texts to evaluate STI's and contraception<br>- Construct appropriate representations to demonstrate understanding of STI's and contraceptives to communicate to a specific audience | | |
| **END OF SEMESTER 2** | | | |

**ASSESSMENT OUTLINE 2022**

**SUBJECT YEAR 11**

A number of assessments will be used throughout the term to identify the students understanding in the course and be used to determine a grade. Student achievement will be reported using the following descriptors.

**Semester 1**

| Assessment Type *SCSA Weighting* | Task Description | KWDHS Weighting | Due Date |
|---|---|---|---|
| Science Inquiry 20% | **Task 1: Model of a call** | 10% | *Term 1, Week 4* |
| Test 20% | **Task 2: Respiratory and Circulatory systems** | 10% | *Term 1, Week 9* |
| Science Inquiry 20% | **Task 3: Enzyme Investigation** | 10% | *Term 2, Week 2* |
| Extended Response 10 | **Task 4: Nutrient and Diet** | 10% | *Term 2, Week 4* |
| Test 20% | **Task 5: Digestive and Urinary systems** | 10% | *Term 2, Week 8* |

**Semester 2**

| Assessment Type *SCSA Weighting* | Task Description | KWDHS Weighting | Due Date |
|---|---|---|---|
| Science Inquiry 20% | **Task 6: DNA/Cell division model** | 10% | *Term 3, Week 2* |
| Test 20% | **Task 7: DNA and Reproductive system** | 10% | *Term 3, Week 6* |
| Science Inquiry 20% | **Task 8: Rat reproductive system dissection report** | 10% | *Term 3, Week 7/8* |
| Extended Response 10% | **Task 9: effects of alcohol and smoking during pregnancy** | 5% | *Term 3, Week 9/10* |
| Test 20% | **Task 10: Pregnancy, Birth and reproductive technologies** | 10% | *Term 4, Week 3* |
| Extended Response 5% | **Task 11: Safe Sex** | 5% | *Term 4, Week* |

It is expected that all assessments will be completed to the best of your ability and be submitted by the deadlines set. Please make yourself aware of the Assessment Policy as failure to meet deadlines has severe consequences.

| Grade | Description | The student demonstrates achievement that: |
|---|---|---|
| **A** | Excellent | has greatly exceeded the expected standard. Achievement is well beyond what is expected at this year level. |
| **B** | Good | exceeds the expected standard. |
| **C** | Satisfactory | at the expected standard. |
| **D** | Limited | is below the expected standard. |
| **E** | Very Low | is below the minimum acceptable for this year level. |

Student Signature: _____ Parent/Guardian Signature: _____