These revision guidelines are a guide only to help you study for your mini exams and semester exam. It provides a guide of what material you need to know well for each topic covered, however, exam questions may be asked on any of the material taught, so please study all the material in this semester:

- Lecture slides
- Prefixes & Suffixes
- Glossaries
- Practice Quiz & Exercises

Please refer to the ‘Biomedicine: Assessment & Assignment Overview’ document for more information on the semester exams and mini exams.

**CYTOLOGY & HISTOLOGY**

- Know how the body is organised? Be able to discuss & define the levels of body organisation.
- Define homeostasis and know the key variables that it controls in the body.
- Define positive and negative feedback mechanisms and give 2 examples of systems/ processes controlled by each mechanism.
- List the difference between Eukaryotic and Prokaryotic Cells.
- Know ALL the Organelles (incl. Chromosomes & Genes) found in an animal cell and their Functions (where given).
- Describe the Cell Membrane / Plasma Membrane and all the structures within, which make it Selectively Permeable e.g. Trans Membrane Protein
- Differentiate between Mitosis and Meiosis.
- Define the Term, ‘MUTATION’
- Know how Proteins are synthesised in the cell. i.e. Describe the 2 steps- Transcription & Translation.
- Describe the 6 Types of Transport Mechanisms used by Cells & Give 2 examples of substances transported in each way, e.g. Passive Diffusion = Movement of very small substances across a cell membrane, DOWN / WITH the concentration gradient i.e. From an area of high concentration to an area of low concentration. e.g. = Gases (O2 & CO2 ) & Liquids
- Know all the Specialised Cells found in Connective Tissue
- The different types of Connective Tissues.
- Know ALL the Membranes (Synovial, Cutaneous, Mucous & Serous - Pleura, Pericardium & Peritoneum) and where they may be found?
SKELETAL SYSTEM

- Know ALL the Anatomical, Physiological, Movement & Directional Terminology e.g. Medial, Proximal, Distal, Caudal, Bilateral, Superficial, deep etc.
- Know the PLANES of the body
- Define & Differentiate between the different Bone cells (Osteoblasts & Osteoclasts)
- Discuss & Explain the mechanisms of Bone GROWTH.
- Know which HORMONES regulate Bone Growth / Density - both in Children and Adults. Pay special attention to Parathyroid Hormone & Calcitonin (Effect & Functions)
- Discuss the Effect of Exercise on Bones
- Know ALL the Types of Bones (5 Bone Classes) and give an example of each.
- What are the Fontanelles and what is their Function?
- Define ‘Origin & Insertion Points’.
- Name & give 1 Example of the 3 different Types of Joints.
- What is a Bursae and what is its function?
- Define and Differentiate between Strains & Sprains
- Define the different Spinal Deformities i.e. Kyphosis, Scoliosis, Lordosis
- Define Bursitis

NOTE: When studying the different PATHOLOGIES, emphasis must be placed on Definition, Causes, RISK FACTORS, Clinical Observation i.e. Signs & Symptoms, Investigations/Tests, Red Flag Symptoms, Differential Diagnoses (Compare & Contrast). Orthodox & Complementary Treatment. (Where Given).

- Know all of the above for:

  - OSTEOPOROSIS incl. Risks Factors (explain why women are at greater risk after the menopause, ie. Protective role of oestrogen etc.)
  - OSTEOMALACIA / RICKETTS
  - OSTEOMYELITIS
  - HYPERCALCAEMIA
  - OSTEOARTHRITIS
  - RHEUMATOID ARTHRITIS
  - GOUT
  - ANKYLOSING SPONDILITIS
MUSCULAR SYSTEM

- Define the following:
  - Sarcolemma
  - Sarcoplasm
  - Myoglobin

- Discuss & compare muscle CONTRACTION with muscle RELAXATION (Sliding Filament Theory) taking special note of the different minerals used for each.

- List 3 functions of ATP (know what ATP is needed for).

- Compare & contrast aerobic & anaerobic respiration.

- Differentiate between the 2 types of skeletal muscle fibres i.e. white vs. red muscle fibres.

- What effect does exercise have on the muscle fibres (i.e. how do they change?)

- Name the 3 muscle types (skeletal, smooth & cardiac muscle) & know everything about each type so that you can compare & contrast all 3.

- List 2 types of smooth muscle and give 2 examples of where they are found.

- Name ALL the MUSCLES identified in the lecture slides. Know their location (where they are found) & give 1 main function/effect for each.

- Differentiate between a muscle tear & a muscle strain.

- Define IMPINGEMENT SYNDROME and know its causes, symptoms & treatment.

- Define CARPAL TUNNEL SYNDROME and know its causes, symptoms, risk factors & treatment.

- With regards to the MUSCULAR DYSTROPHIES in particular Duchenne, Myotonic Dystrophy & Myasthenia Gravis, know the:
  - Cause
  - Pathophysiology / Disease processes
  - Age/ Sex group most affected
  - Main Symptoms / Presentation
RESPIRATORY SYSTEM

- Know the 3 main steps/ processes of the Respiration Cycle.
- Understand and explain how the Mucociliary Escalator works and how it aids Immune Defence.
- What are the Sinuses? List 3 Functions.
- List the main Structures & Function/s of the Pharynx & Larynx with special reference to the Auditory Tubes (Pharynx) & the Epiglottis (Larynx).
- Explain how the Alveoli provide defence against Microbes.
- Discuss & Describe the Mechanism of Ventilation i.e. the process of Inhalation/ Inspiration & Exhalation/ Expiration.
- Know the Composition of Ventilated Air i.e. Different levels of O₂, CO₂, Nitrogen & Water Vapour in Inspired versus Expired Air
- What is Rhinitis? Know the Causes, Symptoms & Complications of Allergic Rhinitis/ Hayfever
- Compare & Contrast Cold vs. FLU (i.e. Be able to distinguish between the Causes, Symptoms, Treatment & Complications of each)
- What are Nasal Polyps?
  - List 2 Causes of Nasal Polyps.
  - Describe the Pathophysiology of this condition.
  - List 4 Symptoms
  - List 2 forms of Treatments.
- Define Acute Bronchitis.
  - Know its main Cause
  - List 3 characteristic Signs / Symptoms.
- Define Asthma
  - List its Causes & Triggers
  - Know its common Signs & Symptoms
  - Know the Allopathic Treatment/ Management.
- Know what to do if someone has an Asthma ATTACK!
- Define Chronic Obstructive Pulmonary Disease (COPD).
  - Know which 2 Conditions COPD includes.
  - Know its Causes, Clinical Features & Medical Treatment/ Management.
- List 3 Causes and 3 Symptoms of Obstructive Sleep Apnoea.
- Define:
  - Pneumothorax
  - Atelectasis
  - Pleurisy
  - Pulmonary Embolism
CARDIOVASCULAR

- List 3 types of Plasma Proteins and give a Function for each.
- Define SERUM
- Define & Differentiate between HAEMATOPOIESIS & ERYTHROPOIESIS, which Hormone is involved in Erythropoiesis and where is this hormone Produced?
- Define HAEMOLYSIS. Name the Main organ/ site where this process occurs.
- Know what the body does with the Erythrocyte parts after these cells die. i.e. what happens to the Protein, Iron & Heme/ Bilirubin?
- Learn the ‘Blood Grouping’ Table- know which blood groups can donate to each other i.e. Compatibility & Incompatibility.
- Explain when & why a mother with Rhesus Negative Blood may experience problems in Pregnancy.
- List the 4 stages of HAEMOSTASIS.
- With regards to ALL the ANAEMIA’S:
  - Know the Signs & Symptoms that are Common to ALL
  - Know the Signs & Symptoms that Differentiate each one from the other
  - Know Causes of each kind.
  - Know which Tests would be carried out and what would they Show?
- Define POLYCYTHAEMIA and know 1 Complication.
- Define GRANULOCYTOPAENIA and know 3 Causes.
- With regards to LEUKAEMIA:
  - Define - Know what effect it has on the different Blood Cells?
  - Know the Clinical Features (Sgs & Sxs) and be able to explain how the change in the different blood cells produces these different Sgs & Sxs.
- Define HAEMOPHILIA and know its Cause- be able to explain why it is more common in Boys.
- Know the differences between ARTERIES & VEINS and CAPILLARIES.
- Know the 4 CHAMBERS of the Heart as well as the 2 MAIN HEART VALVES that separate the chambers on the Left & Right sides.
- Know the Cycle of BLOOD FLOW through the Heart & Circulatory System.
- Explain & Discuss the CONDUCTION SYSTEM of the Heart.
- What effect does the Autonomic Nervous System have on the Heart & Blood Vessels? i.e. Differentiate between Sympathetic & Parasympathetic Stimulation on Heart & Blood Vessels.
- Define the terms, TACHYCARDIA & BRADYCARDIA
- Explain ‘HEPATIC FIRST PASS’.
- Define BLOOD PRESSURE. Know which Blood vessels are MAINLY responsible for providing resistance to the blood flow, thus controlling Blood Pressure.
- Discuss and Differentiate between the 2 main types of LIPOPROTEINS
- List the **5 Types** of **SHOCK**.
  - Identify the **main Causes** and **Signs & Symptoms** of each Type of **Shock**.
  - Discuss the **Action Required**.
- List **8 Causes/ Risk Factors** for the development of **ATHEROMA** as well as **3 Complications**.
- Differentiate between an **Embolus & Thrombus**.
- Define the terms, **ARTERIOSCLEROSIS & Atherosclerosis**.
  - List **3 Complications**
- Define & know the **Symptomatic Differences** between **ANGINA PECTORIS & MYOCARDIAL INFARCTION** (HEART ATTACK).
- With regards to **STROKE**:
  - List **2 common Causes & 2 Risk Factors**
  - List **3 common Signs & Symptoms**
- What is **TIA?** How may it **present?**
- Define the term, ‘**ANEURYSM**’
- With regards to **SUPERFICIAL VEIN THROMBOPHLEBITIS**:
  - Know the **Symptoms & Treatment**
- With regards to **DVT (Deep Vein Thrombosis)**:
  - **Define** - Know the **Cause & List 2 Predisposing Factors**
  - Know the **Signs & Symptoms**
  - Know the **Treatment/Management & 1 Complication**
- What is a **VARICOSE VEIN**? How will it present? (Sgs & Sxs) Know **3 forms of Treatments/Management**
- What are **HAEMORRHOIDS**? Know **3 Causes**.
- With regards to **RAYNAUD’S SYNDROME**:
  - Know the **Cause, Symptoms & Triggers**
- Define **OEDEMA & ASCITES**
- List **5 Complications resulting from Severe/Chronic HYPERTENSION**.
- Know the **Causes & Symptoms** of **RIGHT & LEFT - SIDED HEART FAILURE**.
- Define & Know the **Distinguishing & Differentiating Symptoms** of Endocarditis & Pericarditis
DIGESTIVE SYSTEM

- What is the PERITONEUM? What is its function? Define PERITONITIS.
- What is the GREATER OMENTUM?
- What is a SPHINCTER and how does it Function in the GIT?
- Define the term ‘PERISTALSIS’
- What does GALT stand for and what is its function?
- What are PEYER’S PATCHES & where are they found?
- Know the location of MYENTERIC (Auerbach’s) PLEXUS & SUBMUCOSAL PLEXUS. What does each control?
- How does the Autonomic Nervous System control the Digestive system? Know the effect of STRESS or REST on Digestion?
- Name the 3 types of SALIVARY GLANDS & know the Composition & Function of SALIVA? Pay special attention to Salivary Amylase!
- With regards to Carbohydrates:
  - Give 2 examples of MONOSACCHARIDE, DISACCHARIDES & POLYSACCHARIDES.
- What are ENZYMES?
- List 5 RED FLAG SIGNS & SYMPTOMS when investigating the Digestive System/Pathologies.
- With regards to ORAL THRUSH / CANDIDIASIS:
  - Know the Symptoms, Cause, Differential Diagnoses, Complications & Treatment.
- Define ANGULAR CHEILITIS & list 2 Causes.
- Define XEROSTOMIA & list 2 Causes.
- Define HIATUS HERNIA & list 3 Causes.
- With regards to PEPTIC REFLUX OESOPHAGITIS (GORD):
  - Know the Symptoms, Differential diagnosis, Causes & Trigger Foods.
  - List 3 ways to Manage GORD with Complementary Therapy
  - Know the RISKS / Complications of GORD if left UNTREATED!
- With regards to GASTRIC JUICE:
  - Know ALL 7 Components of Gastric Juice.
  - Know which cells/ glands secrete each component (where given).
  - Know 1 main function for each component of Gastric Juice.
- With regards to CHRONIC GASTRITIS:
  - Define & give 3 main Causes & 2 Symptoms.
  - Explain how Chronic Gastritis may lead to the development of Anaemia
• With regards to PEPTIC ULCERATION:
  ➢ Define & give 3 main Causes
  ➢ Know 2 Distinguishing Symptoms & List 6 Irritating Foods/ Drinks.
  ➢ Know the Allopathic Treatment & List 2 Complications

• What is the ‘BRUSH BORDER,’ where is it located?
  ➢ List ALL the Brush Border Enzymes and know what they work on (Break down/ Catalyse) and what the end products are.

• List 2 main functions of the 2 Enterogastrone Hormones - CHOLECYSTOKININ & SECRETIN?

• Know which Enzymes are secreted by the EXOCRINE PANCREAS to digest Proteins, Carbohydrates & Fats/ Lipids respectively.

• Explain why the Exocrine Pancreas secretes the inactive forms of TRYSIN & CHYMOTRYSIN.

• Know all the Enzymes used to break down Carbs, Proteins and Fats and know what they are broken down into.

• With regards to the LIVER:
  ➢ Study the Anatomy/ Structure (incl. Liver Circulation i.e. Blood Flow To & Through it).
  ➢ List 5 functions of the Liver
  ➢ Know the 2 Phases of Liver Detoxification. Know the cells that carry out this function as well as the Family of Enzymes used.

• Where is Bile Made? Where is it Stored & Concentrated? What is the composition of Bile? List 3 main Functions of Bile.

• With regards to APPENDICITIS:
  ➢ Know ALL the Signs & Symptoms.
  ➢ Discuss the Complications of APPENDICITIS and how this will present (Signs & Symptoms of Burst Appendix!).

• Define INFLAMMATORY BOWEL DISEASE (IBD) and differentiate between CROHN’S DISEASE & ULCERATIVE COLITIS i.e. Learn the Comparison Table in the Slides.

• Know the Conventional Treatment of IBD (esp. Drugs used to treat/ manage).

• With regards to IRRITABLE BOWEL SYNDROME (IBS):
  ➢ Know the Symptoms
  ➢ Causes
  ➢ Common Treatment
  ➢ List 4 Indications / Signs that would Differentiate IBD from IBS.
• With regards to COELIAC DISEASE:
  ➢ Define
  ➢ Discuss the Cause & Pathophysiology.
  ➢ Know the Symptoms.
  ➢ Explain why there may be a Lactose Intolerance and Raised MCV.
  ➢ What would you Test for? & What might you see with an Endoscopic Investigation?
  ➢ What is the treatment?
  ➢ Which foods need to be avoided and why?

• With regards to DIVERTICULOSIS:
  ➢ Define & Differentiate it from DIVERTICULITIS
  ➢ Know 3 Causes as well as 3 Signs & Symptoms.
  ➢ Treatment & Complications

• With regards to LIVER CIRRHOSIS:
  ➢ Define
  ➢ Give 3 causes and 3 consequences.

• With regards to CHOLELITHIASIS:
  ➢ Define.
  ➢ Give 2 Causes
  ➢ List 3 characteristic Symptoms- presentation
  ➢ Explain how this condition could lead to Jaundice.
  ➢ List 2 forms of Treatment/ Management
**ENDOCRINE SYSTEM**

- What are HORMONES?
  - Where are they *Produced*?
  - How are they *Transported*?
  - What do they *Bind* to?
- Explain how Hormone Blood Levels are *regulated*, including how the body adapts to too little / too much Hormone. (i.e. Up-regulation vs. Down-regulation)
- The Anterior & Posterior Lobes of the PITUITARY GLAND i.e. Compare the Anterior Pituitary Gland with the Posterior Pituitary Gland.
- Know ALL the Hormones Secreted by the HYPOTHALAMUS & their Target Gland.
- Study ALL the Hormones Secreted by the ANTERIOR Lobe of the PITUITARY Gland.
  - Know their Target Tissues
  - Know their Main Functions/ Effects
  - Know when production is Highest/ Raised *(where given)*
(i.e. Study the Flow Charts & Functions/ Effects for all the Anterior Pituitary Hormones)
- Study ALL the Hormones secreted by the POSTERIOR Lobe of the PITUITARY Gland:
  - Know their Target Tissues
  - Know their Main Functions/ Effects
  - Know the type of Feedback Loop/ Mechanisms used to secrete these Hormones
(i.e. Study the Flow Charts & Functions/ Effects for all the Posterior Pituitary Hormones)
(Please, always use full words/ names, instead of abbreviations for all the hormones)
- Differentiate between GIGANTISM & ACROMEGALY i.e.
  - List CAUSES & SYMPTOMS for each
  - Discuss the Pathophysiology for each - Explain why the two present differently.
- DIABETES INSIPIDUS is associated with a deficiency of which Hormone? What are the main Symptoms?
- Study the Flow Chart of the THYROID GLAND HORMONES (Thyroxine (T4) & Triiodothyronine (T3)):
  - List 3 effects/ Functions of these Hormones.
  - List 3 things that Stimulate their Production i.e. When their production would be Raised.
  - Know which Minerals are essential for the healthy functioning of this gland & optimal Hormone production?
- Know which Lab Tests would be used to investigate for Thyroid Pathology & what they would show? i.e. Study the Table showing TSH, Free T4 & Free T3 levels in Thyrotoxicosis (Hyperthyroidism) & Hypothyroidism.
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- What is Goitre? When may it occur?
- With regards to HYPOTHYROIDISM & HYPERTHYROIDISM
  - Give an Example of each.
  - Compare & Contrast the Causes between HYPOTHYROIDISM & HYPERTHYROIDISM.
  - Compare & Contrast the Signs & Symptoms between HYPOTHYROIDISM & HYPERTHYROIDISM.
  - Know the Treatment for HYPOTHYROIDISM & HYPERTHYROIDISM.
- List and explain 3 main Symptoms of HYPERTHYROIDISM e.g. Osteoporosis.
- Study the Flow Chart Summarising the ADRENAL GLANDS & Hormones (This can be found in Extras):
  - Give 1 example of a GLUCOCORTICOID & MINERALOCORTICOID.
  - Know where the Glucocorticoids & Mineralocorticoids are produced & name 1 other Hormone produced here.
  - Know the main Functions/ Effects of the Glucocorticoids & Mineralocorticoids?
  - Where are ADRENALINE & NORADRENALINE produced and give 4 functions/ Effects.
- With regard TO ADDISON’S DISEASE & CUSHING’S SYNDROME:
  - Which hormones are affected in each condition and in what way?
  - Differentiate between the Causes of both.
  - Compare & Contrast the Sgs & Sxs (Max 6 for each).
  - Know the Complications/ Dangers if either of these conditions is left untreated.
  - Know Allopathic Treatment for both.
- Which CELLS of the ENDOCRINE PANCREAS produce INSULIN? Which produce GLUCAGON?
  - Compare effects of INSULIN with GLUCAGON.
- With regards to DIABETES MELLITUS:
  - Define & List 4 kinds
  - What are the causes of Type I & Type II Diabetes?
  - List 4 Signs & Symptoms of Type II Diabetes & Early, Type I Diabetes
  - What are Ketones & when are they produced?
  - List 5 complications of Chronic Diabetes
  - What is the Orthodox Treatment for each Type of Diabetes?
- Where is MELATONIN produced? Give 1 main Function.
- Where is THYMOSIN produced and give 1 main Function.
- Study the Table of ‘Local Hormones’

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SKIN

- Know the different components that give Skin its Colour.
- Name the muscle connecting the hair follicle to the dermis. (forms ‘Goose bumps’)
- Explain how the skin provides Innate (Non-specific) & Specific Immune Defense.
- Define & Differentiate HypOthermia & HypERthermia
- Know how the skin functions in Vit D Formation?
- Define the following terms: Lichenification, Keloid & Comedones
- Know ALL the Clinical Features of ECZEMA/DERMATITIS
- With regards to ATOPIC DERMATITIS/ECZEMA:
  - Explain ‘Atopic Disposition’. Know how will it present in a Blood Test?
  - Know the Cause & Symptoms (especially where it typically 1st presents)
  - Know the Complications & Investigations carried out.
  - Treatment (Allopathic AND Complementary.)
- With regards to URTICARIA (HIVES/NETTLE RASH) :
  - Know the Symptoms & Causes.
  - Know the Treatment & Complications.
- With regards to PSORIASIS:
  - Know the Cause & Triggers
  - Know the Symptoms.
  - Know the Complications & Treatment (Allopathic & Complementary).
- With regards to ACNE VULGARIS:
  - Know what is affected (ie. Lesions affect Hair follicles & Sebaceous Glands)
  - Know the Clinical Features (Symptoms) & Causes
  - Know the Treatment (Allopathic).
- With regards to ACNE ROSACEA:
  - Know the Classical Presentation (how it differs from Acne Vulgaris)
  - Know the Characteristic Symptoms.
  - List 5 possible Causes and 4 factors which may Aggravate it
  - List 5 Suggested Complementary Treatment modalities
- With regards to VERRUCAE:
  - Know the Cause & Symptoms.
  - Know the Treatment (Allopathic & Complementary).
- What is VITILIGO and how does it Present?
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- List 4 Complications of Burns.

**LYMPHATIC SYSTEM**

- Know ALL the **components** of the Lymphatic System and **Give 1 Main Function** for each e.g. **LYMPH NODES** = Filtering- removing foreign matter e.g. microbes etc.
  
  SPLAEN = Phagocytosis, Store Blood, Immunity (Maturation of T & B- Lymphocytes)

- What is LYMPH?

- MALT – Define and name 4 places/ locations in the body you would find it.

- List the 3 MAIN/ OVERALL FUNCTIONS of the Lymphatic System.

- With regards to **LYMPHANGITIS**:
  - What is it? - **Define**
  - What **causes** this?
  - What **complication** may occur?
  - How is this condition **treated**?

- With regards to **LYMPHOEDEMA**:
  - **Define**
  - Know the **Primary & Secondary Causes**.

- Know what **ELEPHANTIASIS** is as well as:
  - Causes, Symptoms & Treatment

- **Define **LYMPHADENITIS **and know its **Cause & Symptoms**.

- **Define** SPLENOMEGALY & give 4 Causes