<table>
<tr><td>Course title</td><td colspan="4">Mechanisms of disease and therapeutics II</td></tr>
<tr><td>Course code</td><td colspan="4">MD-303</td></tr>
<tr><td>Course type</td><td colspan="4">Required</td></tr>
<tr><td>Level</td><td colspan="4">1st cycle: undergraduate</td></tr>
<tr><td>Year / Semester</td><td colspan="4">Year 3 / Semester 6 (Spring)</td></tr>
<tr><td>Teacher’s name</td><td colspan="4">Stelia Kadis</td></tr>
<tr><td rowspan="2">ECTS</td><td rowspan="2">20</td><td>Large Group Learning per Week</td><td>Tutorials per Week</td><td>Small group work per Week</td></tr>
<tr><td>10</td><td>4</td><td>4</td></tr>
<tr><td>Course purpose and objectives</td><td colspan="4">Gastrointestinal system
1. Describe the pathophysiological mechanisms underlying upper and lower gastrointestinal conditions, including reflux, ulcers, inflammatory bowel disease, malabsorption, and hepatic disorders.
2. Explain the aetiology, natural history, and histological changes associated with various gastrointestinal diseases and how these contribute to disease progression.
3. Outline the differential diagnoses and clinical presentations for a variety of upper and lower GI conditions, including cancers, infections, and inflammatory diseases.
4. Demonstrate a systematic approach to the investigation of gastrointestinal diseases using appropriate diagnostic modalities, including blood tests, imaging techniques, and endoscopy.
5. Identify evidence-based management strategies, including pharmacological treatments, surgical interventions, and dietary modifications for the effective treatment of gastrointestinal disorders.
6. Discuss the role of chemotherapeutic and immunotherapeutic agents in the management of upper and lower GI tract malignancies and their implications for patient care.
7. Analyze the epidemiological trends, risk factors, incidence, and prevalence of gastrointestinal diseases globally, considering socioeconomic and environmental influences.
8. Evaluate the role of screening, prevention strategies, and public health initiatives in reducing the incidence of gastrointestinal diseases and addressing health disparities.
9. Assess the nutritional status of patients with gastrointestinal diseases and integrate dietary interventions into comprehensive care plans.
10. Discuss the psychosomatic aspects of conditions such as irritable bowel syndrome and the impact of mental health on gastrointestinal health.
11. Reflect on the ethical challenges in managing liver diseases and organ transplantation, including considerations of fairness, access, and allocation of resources in healthcare.</td></tr>
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	Reproductive system 12. Describe the stages of development for male and female reproductive organs, including the descent of the testes and the overall differentiation based on genetic determinants. 13. Identify and explain the structural features, blood supply, lymphatic drainage, and innervation of the male and female reproductive systems, including key organs like the testes, prostate, ovaries, and uterus. 14. Explain the processes of erection, ejaculation, gametogenesis, spermatogenesis, and oogenesis, highlighting the histological aspects that relate to these functions. 15. Discuss the hormonal regulation of reproduction, detailing the roles of pituitary hormones in controlling testosterone production in males and the menstrual cycle in females. 16. Describe the physiological processes involved in the male and female sexual response cycles, including arousal, orgasm, and resolution. 17. Outline the significance of secondary sex characteristics development during puberty in both males and females, emphasizing hormonal influences and structural changes. 18. Explain the processes of conception, including ovulation, fertilization, blastocyst implantation, and the role of trophoblastic enzymes, as well as the overall function of the placenta. 19. Describe the maternal physiological adaptations during pregnancy and the changes that occur during parturition. 20. Summarize the physiological changes occurring in a neonate at birth and the adaptations necessary for life outside the womb, including key neonatal parameters. 21. Discuss the pathways regulating growth in children and the role of the hypothalamus and pituitary gland, along with the mechanisms of ossification and developmental milestones up to the age of five, and methods for assessing these milestones. **Endocrine system** 22. Understand the clinical consequences and causes of excess hormone production from various pituitary cells and the impact of pituitary adenomas. 23. Learn about laboratory confirmation techniques for diagnosing hyperpituitarism and explore medications affecting hormone secretion. 24. Outline the role of surgical interventions in managing hyperpituitarism. 25. Describe the clinical effects of reduced hormone production from the pituitary gland and the conditions leading to hypopituitarism. 26. Review laboratory confirmation methods and discuss implications for hormone replacement therapy. 27. Recognize the clinical manifestations, causes, and diagnosis of hyperthyroidism and hypothyroidism, and learn about management strategies including hormone replacement therapy. 28. Comprehend the types of thyroid cancer, the role of radioactive iodine therapy, and the principles of radioactive decay and safety measures during treatment.

	29. Understand the clinical effects, aetiologies, and management options for hyperparathyroidism and hypoparathyroidism. 30. Explain the causes and clinical consequences of hypercortisolism and hyperaldosteronism, along with differentiating between their types and management strategies. 31. Describe adrenal insufficiency, its aetiology, clinical consequences, and management principles, as well as the nature of endocrine tumours related to adrenal neoplasia and Multiple Endocrine Neoplasia (MEN). 32. Define diabetes mellitus and differentiate between its various types, including diagnostic criteria and pathogenesis. 33. Discuss long-term complications of diabetes and their management, along with the presentation and treatment of diabetic emergencies. 34. Understand the pharmacological management of diabetes including various drug classes, their mechanisms of action, adverse effects, and the treatment of obesity through pharmacological interventions. 35. Recognize the clinical manifestations of pancreatic endocrine tumours, such as insulinomas and glucagonomas.
Learning outcomes	**Gastrointestinal system** **<u>Theme 1: Upper GI conditions</u>** ***Mechanisms of Disease*** 1. Explain the aetiology and natural history of gastro-oesophageal reflux and peptic ulcer disease from the anatomy and physiology of the upper GI tract. 2. Outline the histology and mode of spread of oral and salivary tumours. 3. Discuss the progression from oesophagitis through Barrett's oesophagus to oesophageal cancer. Describe the histology at each stage. 4. Describe the aetiology and histology of gastritis. 5. Compare and contrast the aetiology, histology, and mode of spread of carcinomas of the oesophagus and stomach. ***Clinical Assessment and Management*** 6. Outline the clinical presentation and differential diagnosis for swellings of the salivary glands. 7. Outline the clinical presentation and differential diagnosis of ulcers of the mouth. 8. Describe the clinical presentation and differential diagnosis of Upper GI haemorrhage resulting from acute gastritis, gastric/duodenal ulcer, Mallory-Weiss tear, and oesophageal varices. • Acute gastritis • Gastric and duodenal ulcer. • Cancers of the oesophagus, and stomach. • Outline the approach to the investigation and options for management of Swellings of the salivary glands. • Ulcers in the mouth. 9. Discuss the indications for the use of endoscopy, ultrasound scan, plain radiography, CT scan, MRI scan, and PET scan.

10. Select the most appropriate blood tests in the investigation of upper GI conditions.
11. Describe a systematic and logical approach to the investigation and management of
    - Upper GI haemorrhage resulting from acute gastritis, gastric/duodenal ulcer, Mallory-Weiss tear, and oesophageal varices.
    - Acute gastritis
    - Gastric and duodenal ulcer.
    - Cancers of the oesophagus, stomach, biliary system, and pancreas.
12. Outline the role of surgery in the management of
    - Upper GI haemorrhage resulting from acute gastritis, gastric/duodenal ulcer, Mallory-Weiss tear, and oesophageal varices.
    - Gastric and duodenal ulcer.
    - Cancers of the oesophagus, stomach, biliary system, and pancreas.
    - Acute and chronic cholecystitis.
13. Outline the role of radiotherapy in the management of Cancers of the oesophagus, stomach, biliary system, and pancreas.

Pharmacology and Therapeutics

14. Describe the pharmacology (mechanism of action, adverse effects, clinical indications, place in therapy, mode of administration) of drugs used in the treatment of
    - Gastric and duodenal ulcers.
    - Acute cholecystitis.
    - Acute and chronic pancreatitis
    - Cancers of the oesophagus, stomach, biliary system, and pancreas.
15. Discuss the concept and role of chemotherapeutic agents in the management of upper GI tract tumours.
16. Discuss the concept and role of immunotherapy in the management of upper GI tract tumours.

Impact of disease

17. Describe the risk factors for peptic ulcer and cancers of the upper GI tract.
18. Describe the incidence and prevalence of upper GI tract cancers globally and discuss possible reasons for the differences.
19. Discuss the role of diet in the aetiology and prevention of upper GI tract disease.

Psychology

20. Describe the physiological basis for the relationship between psychological factors and gastrointestinal health.
21. Identify the role of stress in gastrointestinal functions and illness.

22. Outline psychological and behavioural interventions and their efficacy in the management and improvement of outcomes in patients with gastrointestinal disorders.

Theme 2: Lower GI tract conditions

Mechanisms of disease

23. Compare and contrast the aetiology and natural history of Crohn's Disease and ulcerative colitis.
24. Define autoimmunity and autoimmune disease.
25. Describe the main mechanisms of central and peripheral tolerance and explain how their failure can lead to autoimmunity, providing clinical examples
26. Outline the main genetic and environmental factors that influence the development of autoimmune disease.
27. Explain the aetiology and natural history of diverticular disease.
28. Describe the pathophysiology of irritable bowel syndrome and discuss the psychosomatic components of the condition.
29. Describe the pathophysiology of Hirschsprung Disease.
30. Explain the pathophysiology of haemorrhoids and rectal prolapse.
31. Describe the adenoma-carcinoma sequence in the development of colorectal cancer.
32. Discuss the role of genetic mutations on the development and progression of colorectal cancer.
33. Describe the histology and mode of spread of colorectal carcinoma.
34. Define the characteristics, pathogenesis and clinical syndromes caused by E. coli, Salmonella, Campylobacter, Shigella, Clostridium difficile, Staphylococcus, Vibrio cholerae, Helicobacter pylori, Aeromonas, Campylobacter species, Norovirus, Rotavirus, Adenovirus, Hepatitis viruses, Giardia, Cryptosporidium, Amoeba

Clinical Assessment and Management

35. Describe the clinical presentations and differential diagnosis of
    - Diverticular Disease of the colon
    - Diverticulitis
    - Inflammatory Bowel Disease
    - Irritable Bowel Syndrome
    - Colorectal Cancer
    - Acute gastroenteritis
    - Mesenteric vascular disease
    - Haemorrhoids
    - Rectal prolapse
36. Discuss the indications for the use of endoscopy, ultrasound scan, plain radiography, CT scan, MRI scan, and PET scan in lower GI tract conditions.
37. Select the most appropriate blood tests in the investigation of lower GI conditions.

38. Describe a systematic and logical approach to the investigation and management of
    - Lower GI haemorrhage resulting from diverticular disease, angiodysplasia, and haemorrhoids.
    - Diverticular Disease of the colon
    - Diverticulitis
    - Inflammatory Bowel Disease
    - Irritable Bowel Syndrome
    - Colorectal Cancer
    - Acute gastroenteritis
    - Mesenteric vascular disease
    - Haemorrhoids
    - Rectal prolapse.
39. Outline the role of surgery in the management of
    - Lower GI haemorrhage resulting from diverticular disease, angiodysplasia, and haemorrhoids.
    - Cancers of the colon and rectum.
    - Haemorrhoids
40. Outline the role of radiotherapy in the management of cancers of the colon and rectum.

Pharmacology and Therapeutics

41. Describe the pharmacology (mechanism of action, adverse effects, clinical indications, place in therapy, mode of administration) of drugs used in the treatment of
    - Inflammatory bowel disease
    - Irritable bowel syndrome
    - Cancers of the colon and rectum
    - Acute gastroenteritis
    - Nausea and vomiting
42. Discuss the concept and role of chemotherapeutic agents in the management of colorectal tumours.
43. Discuss the concept and role of immunotherapy in the management of colorectal tumours.

Impact of disease

Epidemiology and public health

44. Describe the risk factors for colorectal tumours.

45. Describe the incidence and prevalence of colorectal cancers globally and discuss possible reasons for the differences.
46. Discuss the role of diet in the aetiology and prevention of colonic disease.
47. Discuss the role of screening in colorectal cancer.
48. Explain the relationship between socio-economic background and cancer survival.

Research Methods and Statistics

49. Describe the use of focus groups with cancer patients.

Medical Ethics

50. Describe key ethical issues in oncology and the challenges of care for diverse populations and vulnerable/marginalised patients
51. Outline core arguments in the debate on truth telling/disclosure vs non-disclosure in cancer care
52. Consider the role of multiple layers of uncertainty with reference to the patient perspective and moralities of care in the clinic
53. Describe the advantages of ethnographic observation in the clinic with reference to understanding the dynamics of ethics of care in clinical interactions

Epidemiology and Public Health

54. Discuss the aims of screening and the criteria for selection of a screening programme
55. Describe the properties of screening tests (validity, accuracy and reliability)
56. Describe different types of screening programmes
57. Contrast screening and diagnostic tests
58. Discuss the screening concepts of confirmatory testing, appropriateness, biases
59. Calculate and interpret performance indices for screening (and diagnostic) tests such as sensitivity, specificity, positive and negative predictive value and the effect of prevalence on screening indices
60. Describe the interpretation of reference values
61. Describe basic probability theory (multiplication rule / addition rule), prediction / decision rules, decision trees, likelihood ratios (application of Bayes theorem), post-test and pre-test.

Medical Ethics

62. Describe ethical, legal, professional considerations in predictive genetic testing
63. Explain ethical complexity and approaches to genetic confidentiality
64. Practise ethical concepts and principles in resolving dilemmas

Theme 3: Acute abdomen

Mechanisms of disease

65. Compare and contrast the aetiology and natural history of small and large bowel obstruction.
66. Outline the cause of peritonitis and explain the pathophysiology of the condition.

Clinical assessment and management

67. Describe the clinical presentation and differential diagnosis of
    - Acute appendicitis
    - Acute cholecystitis
    - Perforated viscus
    - Small intestinal obstruction
    - Large intestinal obstruction
    - Acute diverticulitis
    - Mesenteric thrombosis/embolism
    - Acute pancreatitis
68. Discuss the indications for the use of endoscopy, ultrasound scan, plain radiography, CT scan, and MRI scan in the acute abdomen.
69. Select the most appropriate blood tests in the investigation of the acute abdomen.
70. Describe a systematic and logical approach to the investigation and management of:
    - Acute appendicitis
    - Acute cholecystitis
    - Perforated viscus
    - Small intestinal obstruction
    - Large intestinal obstruction
    - Acute diverticulitis
    - Mesenteric thrombosis/embolism
    - Acute pancreatitis

Impact of disease

71. Discuss the age specific incidence of the various causes of acute abdomen.

Theme 4: Malabsorption

Mechanisms of disease

72. Explain the nutrients that are malabsorbed in functional abnormalities of the
    - Stomach
    - Pancreas
    - Jejunum
    - Ileum

73. Describe the aetiology and natural history of conditions in the following organs that give rise to malabsorption.
    - Stomach
    - Pancreas
    - Jejunum
    - Ileum

Clinical Assessment and Management

74. Describe the classical features of malnutrition in children and adults in
    - Protein deficiency
    - Vitamin deficiencies
75. Describe the evaluation of the nutritional state of an infant, child, and adult.
76. Outline a systematic and logical approach to the investigation and management of malnutrition in a variety of settings.
    - Chronic pancreatitis
    - Small bowel malabsorption
    - Poor nutritional intake
    - Chronic disease such as cancer
77. Discuss the indications for enteral and parenteral nutritional support.

Impact of disease

78. Compare and contrast the causes of malnutrition in the Global North and in Low- and Middle-Income Countries.

Climate Change and Health

79. Evaluate how climate change influences risks for malnutrition and foodborne diseases.

Medical Ethics

80. Outline the global dimension of public health ethics
81. Explain the significance of the concept of justice in Global health ethics
82. Describe ethical propositions for addressing and balancing global inequalities in health

<u>Theme 5: Diseases of the hepato-biliary system</u>

Mechanisms of disease

83. Describe the aetiology of jaundice and distinguish the mechanisms involved in pre-hepatic, hepatic and post-hepatic jaundice.
84. Describe the aetiology and natural history of gallstones, distinguishing between cholesterol and pigment gallstones.

85. Outline the aetiology and consequences of failure of the exocrine pancreas.
86. Compare and contrast the aetiology, histology, and mode of spread of carcinomas of the gallbladder, Ampulla of Vater, head of pancreas, and tail of pancreas.
87. Compare and contrast the aetiology and natural history of primary and secondary hepatic tumours.
88. Describe the various aetiologies ((e.g. alcohol, primary biliary cirrhosis) and natural history of cirrhosis of the liver, including the development of oesophageal varices.
89. Compare and contrast the virology and natural history of hepatitis A, B, C and D.
90. Describe the microbiology of acute cholecystitis.

Clinical assessment and management

91. Describe the clinical presentation and differential diagnosis of
    - Acute and chronic cholecystitis.
    - Acute and chronic hepatitis.
    - Acute and chronic pancreatitis.
    - Pancreatic cancer
    - Primary and secondary hepatic cancers
    - Cirrhosis of the liver
    - Haeomsiderosis
92. Discuss the indications for the use of endoscopy, ultrasound scan, plain radiography, CT scan, MRI scan, and PET scan in the management of hepatobiliary disease.
93. Select the most appropriate blood tests in the investigation of hepatobiliary conditions.
94. Describe a systematic and logical approach to the investigation and management of
    - Acute and chronic cholecystitis.
    - Acute and chronic hepatitis.
    - Acute and chronic pancreatitis.
    - Pancreatic cancer
    - Primary and secondary hepatic cancers
    - Cirrhosis of the liver
    - Haeomsiderosis
95. Discuss the role of surgery in the management of
    - Acute and chronic cholecystitis.

- Acute and chronic pancreatitis.
- Pancreatic cancer
- Primary and secondary hepatic cancers

Pharmacology and therapeutics

96. Describe the pharmacology (mechanism of action, adverse effects, clinical indications, place in therapy, mode of administration) of drugs used in the treatment of
    - Acute cholecystitis.
    - Cholestasis
    - Acute and chronic hepatitis.
    - Acute and chronic pancreatitis.
    - Pancreatic cancer
    - Primary and secondary hepatic cancers
    - Cirrhosis of the liver
    - Haeomsiderosis
97. Explain why the liver is susceptible to drug induce damage and list the drugs that are known to cause hepatotoxicity.
98. Describe how paracetamol overdose can lead to hepatotoxicity.
99. Outline the considerations for prescribing in hepatic impairment.
100. List drugs which may cause pancreatitis or cholestasis.
101. Outline the rationale for the pharmacological treatment of chronic decompensated liver failure.

Impact of disease

102. Discuss the ethical and logistical issues surrounding liver transplantation.

Digital Healthcare

103. Understand the integration of digital technologies in therapeutics and pharmacology.
104. Explain how computational models and simulations can advance the understanding of disease mechanism and drug interactions.
105. Assess the role, benefits and challenges of using digital tools for personalized medicine.
106. Analyze the impact of artificial intelligence (AI) and machine learning (ML) on medical diagnostics and treatment.
107. Identify digital tools and software used in the assessment and treatment planning of cardiovascular, respiratory and renal diseases.

108. Discuss the ethical implications of data management and patient privacy in the use of digital technologies in clinical practice, for diagnosis, monitoring and therapy.

109. Examine examples in the Systems: Cardiovascular, Respiratory and Renal.

Reproductive system

<u>Theme 1: Menstrual Disorders and Menopause</u>

Mechanisms of disease and therapeutics

110. Contrast the aetiology and pathophysiology of primary and secondary amenorrhea.

111. Describe the common aetiologies and the pathophysiology of menorrhagia and dysmenorrhea.

112. Describe the pathophysiology of the short-term and long-term symptoms of the menopause.

113. Outline the pathophysiology of polycystic syndrome.

Clinical assessment and Management

114. Describe the clinical presentation and differential diagnosis for primary and secondary amenorrhea, dysmenorrhea, and menorrhagia.

115. Describe the clinical presentation of the short-term and long-term complications of the menopause.

116. Describe the clinical presentations and differential diagnosis of polycystic syndrome.

117. Describe the investigation and management of primary and secondary amenorrhea, dysmenorrhea, and menorrhagia.

118. Describe the investigation and management of the short-term and long-term complications of the menopause.

119. Outline the investigation and management of patients with polycystic syndrome.

Pharmacology and therapeutics

120. Describe the mechanisms of action and adverse effects of hormonal and non-hormonal drugs used in the management of amenorrhea, dysmenorrhea, and menorrhagia.

121. Describe the mechanism of action and the adverse effects of hormone replacement therapy.

Impact of disease

122. Discuss the incidence, prevalence, and socio-economic impact of menorrhagia and dysmenorrhea.

123. Discuss the role of medical intervention in women experiencing the menopause.

Theme 2: Complications of Pregnancy

Mechanisms of common pregnancy complications

124. Discuss the aetiology and pathophysiology of miscarriage.
125. Explain the underlying causes of gestational diabetes.
126. Describe the common causes of ectopic pregnancy.
127. Discuss the aetiology and pathophysiology of pre-eclampsia.
128. Explain the haemolytic disease of the newborn in terms of pathogenic mechanisms and therapy and describe Coombs test.

Clinical Assessment and Management

129. Describe the clinical presentation of miscarriage and ectopic pregnancy.
130. Describe the clinical presentation of gestational diabetes and pre-eclampsia highlighting key signs and symptoms.
131. Identify the key components of routine antenatal care aimed at the early detection of gestational diabetes and pre-eclampsia, discussing their importance in maternal-foetal health.
132. Identify the antenatal screening tests aimed at detecting foetal abnormalities.
133. Describe the investigation and management of a patient with ectopic pregnancy, including medical and surgical treatment options.
134. Explain the processes involved in diagnosing and managing gestational diabetes, including lifestyle interventions and pharmacological therapies.
135. Describe the diagnosis and management of a patient with pre-eclampsia.
136. Describe the clinical management of miscarriage and discuss the most appropriate forms of psychosocial support.

Impact of Disease

137. Discuss the global disparities in maternal and infant mortality, identifying underlying causes such as socioeconomic factors, healthcare access, and educational levels.

Medical Ethics

138. Identify ethical challenges in compulsory medical treatment in pregnancy
139. Examine the issue of maternal-fetal conflict for ethics and law
140. Explore the ethical and legal dimensions surrounding prenatal genetic testing and newborn screening.
141. Identify the implications of technological advances in genomics and screening, and their ethical challenges related to informed consent and reproductive autonomy.
142. Describe Ethical and Legal Considerations in Congenital Anomalies

143. Evaluate legal case studies, including issues of consent, privacy, parental rights, and procreative beneficence.

Theme 3: Labour and delivery

Mechanisms of labour and postpartum care

144. Describe the stages of normal delivery and identify the common causes of difficult delivery, including both maternal and foetal conditions.
145. Identify the common causes of foetal distress during labour.
146. Explain the aetiology and potential consequences of placental abruption, emphasising the impact on maternal and foetal health.
147. Describe the aetiology and pathophysiology of the common causes of postpartum haemorrhage, postpartum sepsis, postpartum pre-eclampsia, postpartum pulmonary embolism.
148. Outline the potential causes of stillbirth, discussing both intrinsic and extrinsic factors that may contribute to this outcome.
149. Define Respiratory Distress Syndrome (RDS) in neonates and explain the physiological basis, risk factors and prevention strategies.

Clinical Assessment and Management

150. Describe the routine monitoring practices during normal labour, identifying the key indicators that suggest the need for medical intervention to ensure maternal and foetal safety.
151. Discuss the common presentations of postpartum haemorrhage, identifying the clinical signs that health professionals should be aware of for timely intervention.
152. Describe the routine care of a patient in the different stages of labour including pain management, monitoring, and emotional support.
153. Outline the indications for assisted delivery techniques and caesarean section, including the criteria for deciding the most appropriate method of delivery.
154. Describe the investigation and management of a patient with postpartum haemorrhage.
155. Discuss the psychosocial support of a patient following a stillbirth.
156. Explain the advantages of breast feeding for baby and mother.

Medical Ethics

157. Outline the legal framework on termination of pregnancy in country comparative perspective & discuss the ethical implications
158. Examine the ethics of termination of pregnancy with reference to a) reproductive autonomy and b) personal ethical code
159. Outline ethical-social considerations related to high rates of caesarean section in specific countries and discuss with reference to patient embodiment, autonomy and the doctor-patient relationship

Pharmacology and Therapeutics

160. Describe the principles for selecting medicines during pregnancy and breast feeding.
161. List drugs that should be avoided in pregnancy and breastfeeding and explain their adverse effects.

Climate Change and Health stream:

162. Assess the impacts of climate change on perinatal outcomes.

Theme 4: Contraception and Infertility

Mechanisms of Disease

163. Describe the possible causes of infertility and discuss the relative importance of each within the local population.

Clinical Assessment and Management

164. Explain the various methods of contraception, detailing their indications, contraindications, and effectiveness, to support informed decision-making in reproductive health.
165. Outline the routine pathway for the investigation of infertility, including the necessary assessments and diagnostic tests that facilitate timely diagnosis and management.
166. Describe the available options for the management of infertility, including assisted reproductive technologies and lifestyle interventions, and discuss their potential advantages and limitations.

Pharmacology and Therapeutics

167. Describe the mechanism of action, adverse effects, and therapeutic roles of IUCDs, progestogens, and the combined contraceptive pill.
168. Describe the mechanism of action, adverse effects and therapeutic roles of drugs used in the treatment of infertility, ensuring an understanding of their clinical applications.

Impact of Disease

169. Outline the global and temporal variations in birth rates, discussing potential causes such as socioeconomic factors, cultural influences, and public health policies, as well as the significance of these variations on population health.
170. Debate the ethical considerations surrounding in vitro fertilization (IVF) and surrogate pregnancy, addressing issues such as consent, access, and the implications for family structures.
171. Discuss the effectiveness of various methods of contraception, providing an evaluation of their reliability and potential for unintended pregnancy.
172. Analyse the likelihood of achieving successful pregnancy following treatments for infertility, considering factors such as age, type of infertility, and treatment modalities.

	173. Describe the mechanism of action, adverse effects, and therapeutic roles of IUCDs, progestogens, and the combined contraceptive pill. 174. Describe the mechanism of action, adverse effects and therapeutic roles of drugs used in the treatment of infertility, ensuring an understanding of their clinical applications. 175. Explain how patients with STDs experience stigma and the impact of such stigmatisation. *Psychology* 176. Explain the role of sexuality in human cycle. 177. Outline the most important sexual dysfunctions. 178. Describe the most important sexual deviations. 179. Understand psychological dimensions of gynecological health. 180. Identify psychological disorders related to gynecological issues. 181. Outline psychological impact of fertility challenges. 182. Recognize postpartum psychological disorders. 183. Understand the role of psychological intervention strategies to support women with gynecological health issues. *Medical Ethics* 184. Identify ethical-legal issues related to patient confidentiality in the case of STDs and HIV/AIDS 185. Examine the principles of respect of privacy and non-discrimination with respect to disclosure of confidential patient information in the public interest 186. Describe the ethical and legal challenges in Assisted Reproductive Technologies (ART) (IVF, Surrogacy, Sperm Donation and Egg Freezing) 187. Examine the regulatory frameworks governing reproductive technologies, with a focus on the Human Fertilisation and Embryology Act (HFE Act) and legal case studies 188. Critically assess the balance between patient autonomy, informed consent, and societal or fetal rights in ART and pre-implantation genetic testing. 189. Explain ectogenesis, its ethical implications and potential applications in reproductive medicine with reference to the current legal/regulatory landscape **<u>Theme 5: Reproductive Cancers</u>** ***Mechanisms of disease*** 190. Discuss the cellular and molecular mechanisms of metastasis including the role of angiogenesis

191. Explain the clinical manifestations of metastases of common cancers using knowledge of the anatomy of the relevant organs, their blood supply and lymphatic drainage
192. Discuss the significance of the common histological types of cancer of the cervix, ovary, endometrium, prostate, and testis.
193. Analyse the significance of the histological grade of cancers and its correlation with prognosis and treatment decisions.
194. Describe the common sites of metastases for cancers of the cervix, ovary, endometrium, prostate, and testis.
195. Explain the recognised staging systems for cancers of the cervix, ovary, endometrium, prostate, and testis, emphasising their role in treatment planning and prognostication.

Clinical Assessment and Management

196. Describe the common clinical presentations of cancers of the cervix, ovary, endometrium, prostate, and testis, aiding the identification and timely referral of cases.
197. Describe the diagnostic pathway for cancers of the cervix, ovary, endometrium, prostate, and testis, including imaging and biopsy techniques.
198. Explain the rationale for adjuvant and neo-adjuvant therapy for cancer, discussing their roles in improving outcomes.
199. Analyse the role of surgery and radiotherapy as treatment modalities of cancers of cervix, ovary, endometrium, prostate, and testis., including indications and expected outcomes.
200. Pharmacology and Therapeutics
201. Outline the mode of action, adverse effects, and therapeutic roles of the common chemotherapeutic and hormonal agents in the treatment of cancers of cervix, ovary, endometrium, prostate, and testis.
202. Outline the mode of action, adverse effects, and therapeutic role of immunotherapy in the treatment of cancers of cervix, ovary, endometrium, prostate, and testis.

Impact of Disease

203. Explain the incidence and prevalence of cancers of the cervix, ovary, endometrium, prostate, and testis including the age and geographical distribution and their implications for public health strategy.
204. Compare and contrast the effectiveness and value of screening programmes for cervical and prostate cancer, discussing their impact on early detection and patient outcomes.
205. Discuss the factors that determine the prognosis in cancers of cervix, ovary, endometrium, prostate, and testis, including stage, histological type, and treatment response.

206. Discuss the role of HPV vaccination in the prevention of cervical cancer including its mechanism of action and the potential impact on public health.

Medical Ethics

207. Outline ethical and legal issues related to the concept of personal responsibility for health and its application in health policies & strategies
208. Critically analyse arguments about whether patient lifestyle should influence access to health care and priority-setting in clinical context
209. Examine dilemmas in clinical decision making, related to liver transplantation (e.g., of alcohol addicts)

Theme 6: Developmental delay and disorders

Mechanisms of disorder

210. Outline the different types of developmental delay in children.
211. Outline the causes of developmental delay.
212. Identify the common causes of growth faltering in children.
213. Outline the physical problems that might lead to difficulties in speech.
214. Define Autism Spectrum Disorders (ASD) and outline their aetiology.
215. Provide an embryological explanation for the development of a cleft and outline its causes.

Clinical Assessment and Management

216. Explain the clinical use of growth charts.
217. Outline the common presentations of delays in speech and language development,
218. Outline the clinical features of ASD.
219. Outline the practical implications for a child and parent in managing cleft lip/palate.
220. Discuss the investigation of a child with growth faltering.
221. Outline the assessment of a child with delay of speech and language development.
222. Outline the role of audiologists and speech and language therapists.
223. Outline the approaches to mitigating the challenges of ASD.
224. Discuss special considerations when prescribing in children (neonates, infants, children, adolescents), including route of administration, dosing, differences in pharmacodynamics, pharmacokinetics and adverse effects
225. List common drugs that should not be used in children and explain why.

Medical Ethics

226. Define the ethical-legal principles of child protection and safeguarding

227. Describe responsibilities of medical students and doctors when dealing with child abuse.

Theme 7: Congenital disorders

Mechanisms of disorder

228. Distinguish between hereditary conditions and congenital conditions.
229. Define the terms malformation, deformation, disruption, sequence, and association and use these terms appropriately when describing congenital abnormalities.
230. Describe the risks for the mother associated with pregnancy over the age of 35, as well as for the baby.
231. Define and classify congenital disorders and list the possible aetiological factors.
232. Using Trisomy 21 as an example, describe how aneuploidies arise.
233. Explain how common developmental defects of the heart may arise.
234. Discuss examples of inborn errors of metabolism.

Clinical Assessment and Management

235. Categorise the congenital heart defects.
236. Describe the presentation and clinical findings in common congenital heart defects.
237. Identify the heart defects and other conditions/complications associated with Down syndrome.
238. Explain how congenital heart defects are investigated.
239. Outline the management of the common congenital defects of the heart.

Impact of disease

240. Discuss the importance of neonatal screening and provide examples from various countries.
241. Outline the epidemiology of congenital heart defects.

Theme 6: Sexually Transmitted Diseases and Infections of the Reproductive Tract

Mechanisms of Disease

242. Analyse the characteristics, virulence factors, pathogenesis, transmission routes and clinical manifestations of the infectious agents listed below.
243. Explain the etiological factors and pathophysiological mechanisms associated with infections caused by Chlamydia trachomatis, Neisseria gonorrhoeae, Treponema pallidum, Mycoplasma genitalium, Haemophilus ducreyi, Trichomonas vaginalis, Candida spp., and Group B Streptococcus and Gardnerella vaginalis.
244. Explain the aetiology and pathophysiological processes of infections associated with viral pathogens, including Human Immunodeficiency Virus

(HIV), Human Papillomavirus (HPV), and Herpes Simplex Virus types 1 and 2 (HSV-1 and HSV-2).

Clinical Assessment and Management

245. Describe the clinical manifestations associated with sexually transmitted diseases (STDs) and various infections of the reproductive tract.
246. Emphasize the differentiation between similar presentations to establish a differential diagnosis.
247. Elaborate on the diagnostic workup for STDs and infections of the reproductive tract, detailing the integration of clinical examination findings, laboratory tests to establish an accurate diagnosis.
248. Discuss the management strategies for these conditions, highlighting the selection of therapeutic interventions. Consider patient-specific factors and potential complications.

Pharmacology and Therapeutics

249. Describe the mechanisms by which pharmacological interventions exert their effects, and outline the potential adverse effects and contraindications associated with their use.
250. Emphasize the importance of selecting appropriate therapeutic regimens based on antimicrobial susceptibility profiles and resistance patterns.

Impact of Disease

251. Examine the epidemiological patterns of STDs and infections of the reproductive tract, including their incidence and prevalence across different population groups.
252. Analyse the preventive measures, public health and socio-economic impacts of these conditions, considering factors such as healthcare costs, and the broader societal burden.

Endocrine system

<u>Theme 1: Disorders of the Pituitary Gland</u>

Hyperpituitarism

253. Explain the clinical consequences of excess hormone production from somatotropes, corticotropes, thyrotropes, and lactotropes.
254. Discuss the aetiology of hyperpituitarism and the impact of pituitary adenomas on hormone production and adjacent structures.
255. Describe laboratory confirmation procedures, utilizing the hypothalamic-pituitary-target organ axis in diagnosis.
256. Describe the pharmacology (including clinical indications, place in therapy, mechanism of action and adverse effects) of drugs that affect growth hormone, vasopression and prolactin secretion and action.
257. Outline the role of surgery in the management of hyperpituitarism.

258. Describe the link between work, stress and illness

Hypopituitarism

259. Describe the clinical impacts of reduced hormone production across the major pituitary tropes, including ADH and oxytocin.
260. Explain the aetiology behind hypopituitarism and why panhypopituitarism is more common than individual hormone deficiency states.
261. Detail the laboratory confirmation techniques and implications for hormone replacement therapies based on specific deficiencies.

Theme 2: Disorders of the Thyroid and Parathyroid Glands

Hyperthyroidism

262. Describe clinical manifestations and the aetiology/pathophysiology behind conditions such as Graves disease and toxic goitres.
263. Outline laboratory confirmation processes and the role of the hypothalamic-pituitary-thyroid axis in diagnosis.
264. Discuss pharmacological treatments and surgical/radiotherapy options for managing hyperthyroidism (radio-iodine, thioureylenes, iodine)

Hypothyroidism

265. Explain the clinical consequences in infants and adults and the aetiology across primary, secondary, and tertiary causes.
266. Outline management strategies, including indication for hormone replacement therapy and associated risks.

Thyroid cancer

267. Briefly describe the major types of thyroid cancer based on the histological structures from which each type arises.
268. Explain the role of radioactive iodine I-131in the treatment of thyroid cancer.
269. Describe the process of radioactive decay in I-131, including the emission of beta particles that destroy thyroid cancer cells and gamma rays used for imaging.
270. Describe the administration methods for I-131 therapy and the importance of dosage control to maximize efficacy while minimizing side effects.
271. Outline the safety measures needed for patients and healthcare providers to minimize radiation exposure after I-131 administration.
272. Describe the application of Single-Photon Emission Computed Tomography (SPECT) and Positron Emission Tomography (PET) scans in studying endocrine glands.

Hyperparathyroidism:

273. Describe the clinical effects and various aetiologies of hyperparathyroidism.
274. Detail laboratory differentiation between forms of hyperparathyroidism and outline management options including surgical and non-surgical approaches.

Hypoparathyroidism:

275. Describe the clinical consequences of hypoparathyroidism.

276. Explain the aetiology and laboratory confirmation for hypoparathyroidism, along with management strategies.

Theme 3: Disorders of the Adrenal Cortex and Medulla

Hypercortisolism:

277. Describe clinical consequences and aetiology, differentiating endogenous and exogenous hypercortisolism.
278. Outline management strategies for Cushing's syndrome.

Hyperaldosteronism

279. Differentiate between primary and secondary hyperaldosteronism; describe the biochemical investigations used to distinguish them.
280. Describe the aetiology of Conn's syndrome and its management.
281. Outline the management of other causes of hyperaldosteronism.

Adrenal Insufficiency

282. Describe clinical consequences, aetiology (primary, secondary, tertiary), and diagnostic approaches.
283. Outline the principles of management for adrenal insufficiency.

Endocrine Neoplasia

284. Outline the nature of endocrine tumours of the adrenal medulla.
285. Explain Multiple Endocrine Neoplasia (MEN) and outline the endocrine tumours associated with different types of MEN.

Theme 4: Disorders of the Endocrine Pancreas

Diabetes Mellitus

286. Define diabetes mellitus and differentiate between its types, including Type 1, Type 2, and less common types.
287. Explain diagnostic criteria for various glycaemic states and describe the pathogenesis and epidemiology of Type 1 and Type 2 diabetes.
288. Discuss long-term complications (macro- and micro-vascular) and their management.

Diabetic Emergencies

289. Describe the presentation and management of DKA, HHS, and hypoglycaemia.

Pharmacology and therapeutics

290. Describe the pharmacology (mechanism of action, adverse effects, clinical indications, place in therapy, mode of administration) of the drugs commonly used in diabetes mellitus, including insulin, metformin, sulfonylureas, thiazolidinediones, GLP-1 mimetics, DPP-4 inhibitors and sodium-glucose co-transporter 2 (SGLT-2) inhibitors.
291. Describe pharmacological interventions used to treat obesity (centrally acting drugs: GLP-1 mimetics, phentermine, topiramate, bupropion, naltrexone;

	peripheral: lipase inhibitors) and the challenges of developing safe and effective drugs. *Endocrine Tumours* 292. Briefly describe clinical manifestations of secretory tumours of the pancreas, such as insulinomas and glucagonomas. *Epidemiology and Public* 293. Explain the concepts underpinning health, well-being, the human right to health, and SDGs. 294. Outline the different types of social determinants of health 295. Describe the main types of health inequalities, their characteristics and impact on population health and strategies to reduce them 296. Define the different levels of prevention and appreciate their value in Public Health practice 297. Describe the role of lifestyle medicine in the promotion of health and management of chronic non-communicable disease. *Climate and Health* 298. Investigate how social determinants, including forced migration and conflict, increase vulnerability to health impacts from climate change 299. Analyze how health outcomes in response to climate events vary within and among different communities and regions 300. Evaluate the impacts of climate change on global health inequities, including inequitable resource allocation for adaptive responses 301. Define environmental justice and recognize its significance to climate health solutions. *Digital Health Stream* 302. Identify digital tools and software used in the assessment and treatment planning of GI, reproductive and endocrine diseases. 303. Evaluate digital methods for monitoring drug efficacy and patient adherence. *Psychology* 304. Describe the major links between endocrine disorders and psychosocial wellbeing. 305. Outline the main issues associated with the use of hormonal treatments.		
Prerequisites	None	**Required**	None
Course content	**Gastrointestinal System Themes:** 1. Upper GI conditions 2. Lower GI tract conditions 3. Acute abdomen 4. Malabsorption		

<table>
<tr><td></td><td>5. Diseases of the hepato-biliary system
Reproductive System Themes:
1. Menstrual Disorders and Menopause
2. Complications of Pregnancy
3. Labour and delivery
4. Contraception and Infertility
5. Reproductive Cancers
6. Developmental delay and disorders
7. Congenital disorders
8. Sexually Transmitted Diseases and Infections of the Reproductive Tract
Endocrine System Themes:
1. Disorders of the Pituitary Gland
2. Disorders of the Thyroid and Parathyroid Glands
3. Disorders of the Adrenal Cortex and Medulla
4. Disorders of the Endocrine Pancreas</td></tr>
<tr><td>Teaching methodology</td><td>Lectures
Tutorials
Flipped learning
Directed self-study
Group Work</td></tr>
<tr><td>Bibliography</td><td>Required Textbooks/Reading:
<table>
<tr><th>Authors</th><th>Title</th><th>Edition</th><th>Publisher</th><th>Year</th><th>ISBN</th></tr>
<tr><td>Medical Microbiology</td><td>Medical Microbiology</td><td>9th Edition</td><td>Elsevier</td><td>2021</td><td>9780323673228</td></tr>
<tr><td>Clinical Neurology</td><td>Clinical Neurology</td><td>11th Edition</td><td>McGraw Hill/Lange</td><td>2020</td><td>9781260458350</td></tr>
<tr><td>Oxford Desk Reference: Clinical Genetics and Genomics</td><td>Oxford Desk Reference: Clinical Genetics and Genomics</td><td>2nd edition</td><td>Oxford University press</td><td>2017</td><td>9780199557509</td></tr>
<tr><td>Kumar and Clark's Clinical Medicine</td><td>Kumar and Clark's Clinical Medicine</td><td>10th Edition</td><td>Elsevier</td><td>2021</td><td>9780702078682</td></tr>
<tr><td>Kuby Immunology [Including COVID-19</td><td>Kuby Immunology [Including</td><td>8th Edition</td><td>WH Freeman</td><td>2022</td><td>9781319498658</td></tr>
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& digital update]	COVID-19 & digital update]				
Robbins & Kumar Basic Pathology	Robbins & Kumar Basic Pathology	11th Edition	Elsevier	2023	9780323790185
Rang and Dale's pharmacology	Rang and Dale's pharmacology	10th Edition	Elsevier	2024	9780323873956
Macleod's clinical examination	Macleod's clinical examination	15th Edition	Elsevier	2023	9780323847704
Skills for communicating with patients	Skills for communicating with patients	3rd Edition	CRC Press	2013	9781846193651 https://ebookcentral.proquest.com/lib/nicosia/detail.action?docID=4742673

Recommended Textbooks/Reading:

Authors	Title	Edition	Publisher	Year	ISBN
Dominic Wilkinson, Jonathan Herring, Julian Savulescu	Medical Ethics and Law: A curriculum for the 21st Century	3rd Edition	Elsevier	2020	9780702075964
Ronald Cohn, Stephen Scherer, Ada Hamosh	Thompson & Thompson Genetics in Medicine	9th edition	Elsevier	2023	9780323547628
Hoffbrand, A.V	Hoffbrand's essential haematology	9th Edition	Wiley-Balackwell	2024	9781394168156
by Joseph Loscalzo (Author), Anthony S. Fauci (Auth	Harrison's Principles of Internal Medicine, Twenty-First	21st Edition	McGraw Hill / Medica	2022	9781264268504

	or), Dennis L. Kasper (Author), Stephen Hauser (Author), Dan Longo (Author), J. Larry Jameson (Author)	Edition (Vol.1 & Vol.2)				
	Gillespie and Bamford	Medical Microbiology and Infection at a glance	5th Edition	Wiley-Blackwell	2022	9781119592167
	Delves, Martin, Burton and Roitt	Roitt's Essential Immunology	13th Edition	Wiley-Blackwell	2017	9781118415771
	Paul Johns	Clinical Neuroscience: an illustrated colour text	1st edition	Elsevier	2014	9781455742127
	Impey and Child	Obstetrics and Gynaecology	5th edition	Wiley-Blackwell	2017	9781119010791
	DeVita Vincent T, Rosenberg Steven A, Lawrence Theodore S	DeVita, Hellman & Rosenberg's Cancer: Principles and Practice of Oncology	12th edition	Wolters Kluwer Health	2023	9781975184742
	Karen J. Marcdante, Robert M. Kliegman, Abigail M. Schuh	Nelson Essentials of Pediatrics	9th edition	Elsevier	2022	9780323775625
	Laurence Brunton, Bjorn Knollmann	Goodman & Gilman's The Pharmacological Basis of Therapeutics	14th Edition	McGraw Hill	2023	9781264258079

		Diagnostic and Statistical Manual of Mental Disorders	5th Edition (DSM5)	American Psychiatric Publishing	2022	9780890425763
	Krentel A, McKee M	Issues in public health: challenges for the 21st Century	3rd Edition	Open University Press	2022	9780335249152
	Timothy L. Lash, Tyler J. VanderWeele, Sebastien Haneuse, Kenneth J. Rothman	Modern Epidemiology	4th Edition	Wolters Kluwer	2021	9781451193282 https://ebookcentral.proquest.com/lib/nicosia/detail.action?docID=6947080
	Lawrence, Peter	Essentials of General Surgery and Surgical Specialties	6th edition	LWW	2018	9781496351043
	O. James Garden, Rowan W. Parks	Principles and Practice of Surgery	8th Edition	Elsevier	2023	9780702082511
Assessment	Final exam (100%)					
Language	English					