<table>
<tr><td>Course title</td><td colspan="5">Nutrition and Metabolism</td></tr>
<tr><td>Course code</td><td colspan="5">GEMD-103</td></tr>
<tr><td>Course type</td><td colspan="5">Required</td></tr>
<tr><td>Level</td><td colspan="5">Undergraduate</td></tr>
<tr><td>Year / Semester</td><td colspan="5">Year 1, Semester 2</td></tr>
<tr><td>Teacher’s name</td><td colspan="5">Dr Chloe Antoniou</td></tr>
<tr><td rowspan="3">ECTS</td><td rowspan="3">13</td><td colspan="4">Teaching Periods per Week</td></tr>
<tr><td>Large Group Learning</td><td>Small Group Learning</td><td>Laboratories & Skills</td><td>Clinical Practice</td></tr>
<tr><td>8</td><td>6</td><td>2</td><td>4</td></tr>
<tr><td>Course purpose and objectives</td><td colspan="5">The aim of this course is:
• to provide students with a detailed understanding of the structure and function of key biomolecules, as well as an in-depth comprehension of their metabolism.
• to understand the relationship between diet, exercise and weight and what comprises a healthy diet, including the importance of vitamins.
• to explain the causes and discuss the management of malnutrition</td></tr>
<tr><td>Learning outcomes</td><td colspan="5">At the end of the course the student will be able to:

Knowledge
1. Describe the nutritional components that make up a balanced healthy diet
2. Explain the utility of the labelling of ingredients on food products.
3. Discuss the role of nutrition and healthy eating in the One Health initiative
4. Define the terms outbreak, endemic, epidemic and pandemic.
5. Describe the biochemical pathways involved in the intermediary metabolism of carbohydrates, lipids and amino acids.
6. Define the term Basal Metabolic Rate (BMR) and explain the factors which affect BMR.
7. Compare and contrast the intermediary metabolic processes taking place after meals, between meals and during fasting/starvation and explain how these processes are regulated.
8. Compare and contrast energy metabolism in skeletal muscle, cardiac muscle and the brain.
9. Compare and contrast aerobic and anaerobic metabolism in muscle.
10. Explain how aerobic training allows muscles to sustain endurance exercise
11. Explain how exhaustion is linked to fuel switching.
12. Define Body Mass Index (BMI) and discuss its pros and cons.
13. Classify the main types of malnutrition and give examples of how these might arise.
14. Discuss the common causes and consequences (worldwide) of obesity and overweight.</td></tr>
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	15. Discuss the impact of the rising incidence of obesity on the health of nations. 16. Explain the role of vitamins in health 17. Describe common vitamin deficiencies and toxicities and list common signs indicating vitamin deficiency 18. Describe the sources and functions of the major vitamins and discuss examples of metabolic reactions that require them 19. Discuss public health interventions for preventing vitamin deficiencies 20. Discuss the role of cholesterol in health and disease and outline ways in which cholesterol levels can be regulated, including through the use of statins. 21. Describe the concept of embodiment. 22. Describe medicalisation of obesity. 23. Identify and describe public health interventions for the prevention obesity. 24. Outline the fundamental principles of carbohydrate, protein and lipid structure. 25. Discuss glucose entry in cells. 26. Outline insulin receptor signaling and □-adrenergic receptor signalling. 27. Define glycemic index. 28. Discuss the biochemical basis of inborn errors of metabolism, such as G6PD, phenylketonuria and many others. 29. Discuss laboratory investigations for inborn errors of metabolism. 30. Demonstrate the fundamental components of a whole food, plant-based diet such as the traditional Mediterranean diet. 31. To discuss the characteristics of the most common dietary patterns followed by populations or individuals including: Western' diet, Mediterranean diet, Vegetarian/vegan diets, ketogenic diet, intermittent fasting. 32. Discuss how genetics are related to nutrition e.g the genetics behind lactose intolerance, diabetes etc. 33. Describe how ethanol is metabolized in cells and discuss the genetic causes of "alcohol flushing". 34. Discuss the metabolic consequences of chronic alcohol use. ***Skills*** 35. Discuss the elements of a dietary history from a patient. 36. Carry out an RFLP analysis on genomic DNA isolated from saliva in order to determine the SNP status of a common polymorphism related to lactose intolerance. ***Professional competencies*** 37. Recognise the need to maintain a personal healthy lifestyle 38. Discuss the role of health professionals in raising awareness and influencing public and individual attitudes to exercise and healthy diet 39. Evaluate the role of sports medicine in promoting healthy lifestyle 40. Discuss the role of health professionals promoting healthy lifestyles and managing malnutritional states 41. Discuss the importance of good communication within the MDT when managing dietary issues and eating disorders.		
Prerequisites	None	**Required**	None

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<tr><td>Course content</td><td>

The nature of a healthy diet
Macromolecule structure and function
Intermediary metabolism
Malnutrition
Energy storage and usage
Exercise and its benefits
Vitamins and vitamin deficiencies

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<tr><td>Teaching methodology</td><td>Lectures
Tutorials – two case-based learning small group sessions, two expert-led class discussions/debates
Flipped classroom activities
Community and/or hospital visits each week, relating to the case of the week
Student centred learning/self-study</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>David L. Nelson and Michael M. Cox</td><td>Lehninger Principles of Biochemistry</td><td>8th edition (international)</td><td>W. H. Freeman and Company</td><td>2021</td><td>9781319381493 (paperback)</td></tr>
<tr><td>World Health Organisation</td><td>Fact Sheets: Healthy Diet Obesity and Overweight Malnutrition Salt Reduction</td><td></td><td>On-line</td><td>2021</td><td>https://www.who.int/news-room/fact-sheets</td></tr>
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<tr><td>Assessment</td><td>The course will be assessed at the end of Semester 2 with a Summative Final Examination consisting of Single Best Answer MCQs (SBAs) and Short Answer Questions (SAQs).</td></tr>
<tr><td>Language</td><td>English</td></tr>
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