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<th>No.</th>
<th>Subject</th>
<th>Code</th>
<th>Synopsis</th>
<th>Note</th>
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<tr>
<td>1.</td>
<td>HUMAN ANATOMY AND PHYSIOLOGY I</td>
<td>MGS1143</td>
<td>Human anatomy and physiology I consists of both anatomy and physiology of the human body. It creates a good foundation by firstly introducing the organization of the human body. Other focus of this course include the integumentary, the musculoskeletal and the nervous system.</td>
<td>Share with Degree of Occupational Safety and Health</td>
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<td>Core subject</td>
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<td>2.</td>
<td>HUMAN ANATOMY AND PHYSIOLOGY II</td>
<td>MGS1213</td>
<td>Human Anatomy and Physiology II is a continuation of Human anatomy and Physiology I. This subject focuses on the endocrine, cardiovascular, gastrointestinal, urinary, respiratory, lymphatic and reproductive system.</td>
<td>Share with Degree of Occupational Safety and Health</td>
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<td>Core subject</td>
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<td>3.</td>
<td>TRANSFUSION SCIENCE AND BLOOD BANKING</td>
<td>MLS3134</td>
<td>This module will build upon the knowledge and practical experience from haematology and immunology. The roles of transfusion science in the diagnosis, monitoring and treatment of disease will be made apparent.</td>
<td>Core subject</td>
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<td>4.</td>
<td>DIAGNOSTIC CYTOLOGY</td>
<td>MLS 1233</td>
<td>This course covers the theory, conceptual foundation on gynaecological and non-gynaecological cytology and covers the smear preparation, the staining, and screening of Pap smear slides for identification of pre-cancer and cancer.</td>
<td>Core subject</td>
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<td>5.</td>
<td>HISTOPATHOLOGY</td>
<td>MLS2263</td>
<td>The course provides the basic foundation in theory, concept and techniques regarding fixation, tissue processing, H&amp;E stains, special stains, decalcification, Enzyme Immunohistochemistry' and Immunocytochemistry..</td>
<td>Core subject</td>
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<td>6.</td>
<td>BASIC BIOCHEMISTRY</td>
<td>MGS 1133</td>
<td>This subject introduces students to the fundamentals of living chemistry as they apply to the health and biomedical sciences. The course includes the essential components of organic chemistry with an emphasis on</td>
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<td>7</td>
<td>BASIC HEMATOLOGY</td>
<td>MLS 2223</td>
<td>This course will introduce the student to the principles of basic hematology which include structure and function of blood cells and blood components, hemopoiesis and red cell metabolism. Particular emphasis will be given to a few important basic concepts such as hemoglobin synthesis, structure and function of blood cells. Basic practical skills will be covered on hemoglobin and hematocrit estimation, red cell and platelet counts, white blood cell counts, preparation, staining and examination of peripheral blood smears, white blood cell differential counts, erythrocyte sedimentation rate (ESR) test. The student will also be exposed to basic laboratory management and instrumentations used in the haematology laboratory.</td>
<td>Core subject</td>
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<tr>
<td>8</td>
<td>CLINICAL BIOCHEMISTRY</td>
<td>MLS 3154</td>
<td>This course explores mechanisms involved in the principal of procedure the clinical biochemistry test associated with human biochemical specimen and metabolism disorder. Emphasis is placed upon the etiology, clinical symptoms and laboratory techniques used to diagnose the biochemical disorders.</td>
<td>Core subject</td>
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<td>9</td>
<td>CLINICAL HEMATOLOGY</td>
<td>MLS 1274</td>
<td>This course applies basic principles of hematology learned in the Basic Hematology course. Special emphasis will be given to common haematological diseases such as nutritional anemia, hereditary and acquired hemolytic anemias, benign leukocytes disorders, leukemias and other hematological malignancies. Examination and assessment of peripheral blood and bone marrow smears, morphology of red cell inclusions, bleeding disorders due to vascular, platelets and blood coagulation factors are included. Practicals skills on preparation and staining of blood,</td>
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<td>10.</td>
<td>CLINICAL MICROBIOLOGY</td>
<td>MLS 3233</td>
<td>This course seeks to provide students with an understanding of important scientific concept, and ability to think critically, and understanding of the importance of microbiology to society in general. This course covers the classification, identification, and pathology of disease causing organism such as bacteria, fungi, yeast, viruses, parasites and other. The main focus is related to the theory and operation of microbiological procedures such as collection and preparation of specimen, culturing methods, staining techniques, antibiotic sensitivity testing and identification of common bacteria cultured in the laboratory.</td>
<td>Core subject Share with Degree of Occupational Safety and Health</td>
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<td>11.</td>
<td>EPIDEMIOLOGY</td>
<td>MLS3142</td>
<td>This subject will cover components of health surveillance and epidemiology. Epidemiology is the branch of medical science that investigates all the factors that determine the presence or absence of diseases and disorders. Epidemiological study will help students to understand how many people in a particular workplace have a disease or disorder, if those numbers are changing, and how the disorder affects the workplace environmentally and economically using statistical application.</td>
<td>Core subject</td>
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<td>12.</td>
<td>ETHICS AND LAW FOR HEALTH PROFESSION</td>
<td>MGS 2123</td>
<td>This course is an introduction to medical ethics. The first part of the course provides an introduction to ethical concepts, theory and principles, which is intended to serve as a background aid for thinking through the particular issues discussed in the course. Topics discussed will also include confidentiality and truth-telling in the results of medical/clinical tests and</td>
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The course will attempt to integrate professionalism, codes of ethics, medical research ethics and the Malaysian Pathology Laboratory Act 2007 with routine medical laboratory operational protocols.

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<td>13. HISTOLOGY &amp; CYTOLOGY</td>
<td>MLS 3223</td>
<td>This course covers the microscopic anatomy of the human body, training in microscopy using light microscope, introduction of tissue processing and basic principles of histological staining of samples.</td>
<td>Core subject</td>
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<tr>
<td>14. IMMUNOLOGY</td>
<td>MLS 2113</td>
<td>This course will introduce the student to the basic concepts of immunology with regard to innate and acquired immunity. It will include specific and non-specific immunity, the biology of natural killer (NK) cells, T and B lymphocytes, Major Histocompatibility Complex (MHC), cytokines and their actions, and the roles of complement and interferon in host defence. The course is lecture-oriented, supplemented by some practical sessions. Additionally students may be required to make presentations on selected related topics.</td>
<td>Core subject</td>
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<tr>
<td>15. LABORATORY INSTRUMENTATIONS</td>
<td>MLS 1253</td>
<td>In this course, student will be exposed to the various types instruments as well as the general principles on how the instrument operates. Student will be introduced to the calculation and calibration curves and also errors which might occur in an instrument. Students will be taught to solve common problems arise during operation of general instruments with an appropriate troubleshooting.</td>
<td>Core subject</td>
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<tr>
<td>16. LABORATORY MANAGEMENT</td>
<td>MLS 3264</td>
<td>The laboratory management module equips the students with the basic theories and concepts in Management, Organisational behaviour, human resources management, theories and concepts on quality system ISO 15199 &amp; LIS in a clinical laboratory</td>
<td>Core subject</td>
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<tr>
<td>17.</td>
<td>CELL AND HUMAN GENETICS</td>
<td>MLS 1223</td>
<td>This module will help students understand the important principles of molecular biology and human genetics. Focus is on the functions of genes, mutation and DNA repair, the importance of modern medical genetics will be emphasized, and the study on the relationship between genotype and phenotype in the context of clinical human genetics will be emphasized. Analysis of inheritance and the role of genetics in determining disease incidence will also be examined.</td>
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<td>18.</td>
<td>APPLIED MOLECULAR BIOLOGY</td>
<td>MLS 2153</td>
<td>This course covers both basic and applied concepts in molecular biology. It is designed for students with a good working knowledge of molecular biology who want to study more advanced concepts and how they may be applied in medical biotechnology. Topics for discussion include DNA/RNA structure, DNA replication, transcription, translation, posttranslational modifications, restriction enzymes, general recombinant DNA techniques (DNA ligations, bacterial transformation, DNA/RNA isolation), DNA sequencing, plasmids, and polymerase chain reaction.</td>
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<tr>
<td>19.</td>
<td>Advance Medical Diagnostic</td>
<td>MLS 3253</td>
<td>This course covers basic concepts, visit and practical applications of modern laboratory diagnostic techniques. Topics include the principles of testing methodology, and the application of molecular methods to the clinical and research laboratory. The test methods to be covered include nucleic acid-based methods such as hybridization, amplification; non-nucleic acid methods such as HPLC, GLC, and protein analysis; and technologies such as in situ hybridization, immunohistochemistry ELISA, protein, genomic and Micro array cancer screening methodologies. In addition to the test procedures, students are exposed to aspects of GLP and GMP quality assurance regulatory issues.</td>
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<td>MLS 3213</td>
<td>MEDICAL PARASITOLOGY AND ENTOMOLOGY</td>
<td>The Parasitology component equips the students with the basic theory and technical skills in the study of common Protozoa, Nematodes, Trematodes and Cestodes of medical importance. The Entomology component emphasise on the theoretical and technical aspects of Arachnid of medical importance. Including mosquitoes, flies, lice and ticks. The Arachnids are studied from the aspects of life cycles and species identification.</td>
<td>Core subject</td>
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<tr>
<td>MGS 1123</td>
<td>PATHOLOGY</td>
<td>Pathology is defined as the study of disease. The basic response of cells and tissues to disease processes are covered in this course.</td>
<td>Core subject</td>
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<tr>
<td>MLS 2213</td>
<td>PATHOPHYSIOLOGY</td>
<td>This course covers the integrative regulatory mechanisms responsible for maintenance of homeostatsis in the normal human and the alterations which occur in these mechanisms leading to specific disease processes.</td>
<td>Core subject</td>
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<tr>
<td>MLS 2143</td>
<td>PHARMACOLOGY AND TOXICOLOGY</td>
<td>This course covers the theory, conceptual foundation on pharmacology and toxicology. The course covers the dose response relationship, mode of actions, indications, side effects, adverse effects, contraindications and drugs/toxicants interactions.</td>
<td>Core subject</td>
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<tr>
<td>MLS 1113</td>
<td>PRINCIPLES OF LABORATORY SCIENCE</td>
<td>This course covers the theory, conceptual foundation on laboratory instrument and glassware, the work flow and laboratory information system, laboratory mathematics, laboratory ethics and procedures in the medical laboratory.</td>
<td>Core subject</td>
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<tr>
<td>MGS 4116</td>
<td>RESEARCH PROJECT</td>
<td>This research project is designed to provide final year students with an opportunity to conduct research in an area related to medical diagnostic. Students must present the project proposal to the committee. Students must make arrangements with both the faculty supervisor and the course head of program at least one</td>
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semester in advance. The project supervisor should normally be a faculty member.

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<td>26.</td>
<td>SCIENTIFIC COMMUNICATION</td>
<td>MLS 3243</td>
<td>This course covers the completion of the undergraduate MLS students' final year project by presenting their research work to be assessed by external examiners.</td>
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<td>27.</td>
<td>VIROLOGY AND MYCOLOGY</td>
<td>MLS 2254</td>
<td>This course covers the theory, conceptual foundation of virology and mycology including structure, classification, pathogenesis, disease control and application of laboratory procedures for identification and diagnosis of diseases</td>
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Core subject