

6.3. Core Courses Level 200

GTA201/2-Audiological Instrumentation

This course introduces students to best practice of room acoustics in audiology, typical audiological instrumentations and their fundamental components. It also covers the calibration procedure of each audiology device using specific calibrators. This course will be taught via lectures, tutorials and practical sessions. Students will be assessed through tests, practical reports and final examination.

List of text/reference books:

1. Bess, F.H., & Humes, L.E., *Audiology: The Fundamentals* (4th Ed.). USA: Lippincott Williams & Wilkins, 2008.
2. Katz, J., Medwetsky, L., Burkard, R., & Hood, L. (Eds.), *Handbook of Clinical Audiology*. USA: Lippincott Williams & Wilkins, 2009.
3. Martin, F.N., & Clark, J.G., *Introduction to Audiology* (11th Ed.). Allyn & Bacon Communication Sciences and Disorders, 2011.

GTA203/3-Advanced Audiology Techniques

This course introduces students to the auditory lesions, the fundamental of pure tone audiometry with clinical masking, high frequency tympanometry, acoustic reflex and advanced speech tests. It also covers the results integration of the mentioned tests, non-organic hearing loss (NOHL) and site of lesion tests. This course will be taught via lectures, tutorials, problem-based learning and practical. Students will be assessed through test, assignment, practical report and final examination.

List of text/reference books:

1. Gelfand, S.A., *Essentials of Audiology*. USA: Thieme, 2009.
2. Katz, J., Medwetsky, L., Burkard, R., & Hood, L. (Eds.), *Handbook of Clinical Audiology*. USA: Lippincott Williams & Wilkins, 2009.
3. Kramer, S. & Guthrie, L., *Audiology Workbook*. San Diego: Plural Publishing Inc., 2008.
4. Roeser, R.J., Valente, M., & Hosford-Dunn, H., *Audiology Diagnosis*. USA: Thieme, 2007.
5. Hunter, L. & Shahnaz, N., *Acoustic Immittance Measures Basic and Advanced Practice*. San Diego: Plural Publishing Inc., 2012

GTA205/2-Neurology for Hearing and Speech

This course introduces students to fundamental principles of neurology, central nervous system and peripheral system related to hearing (neuroaudiology) and speech. It also covers the related neurological diseases, basic clinical examinations and the importance of interdisciplinary approach in managing patients. This course will be taught via lectures, tutorials and practical sessions. Students will be assessed through tests, presentation, practical reports and final examination.

List of text/reference books:

1. Berlin, C. I., *The Brain And Sensory Plasticity: Language Acquisition And Hearing*. San Diego: Singular Publishing Group, Inc., 2003.
2. Ray, J., *Review of Neurology - A Workbook for Speech and Hearing Students*. St. Louis: Mosby-Year Book, Inc., 2003
Medical Otology and Neurotology: A Clinical Guide to Auditory and Vestibular Disorders New York: Thieme, 2006.
3. Luxon, L.M., Furman, J.M., Martini, A., Stephens, D., *Textbook of Audiological Medicine : Clinical Aspects of Hearing and Balance*. London: Martin Dunitz, 2003.
4. Furman, J.M., Cass, S.P., *Vestibular Disorders : A Case-Study Approach*. New York: Oxford University Press Barbara, 2003.
5. Herlihy, B., *The Human Body in Health and Illness* (3rd Ed.). Philadelphia: W.B. Saunders Company, 2006.

GTA208/4-Pediatric Audiology

This course introduces students to hearing health aspects of pediatric population including medical evaluation and management, hearing test protocols, rehabilitation, education management of children with hearing loss and the importance of interdisciplinary approach. This course also covers acoustic speech signal and speech perception assessment of infants and children as well as audiological procedures such as Behavioural Observation Audiometry (BOA), Visual Reinforcement Audiometry (VRA), Play Audiometry and electrophysiological testing. This course will be taught through lectures, tutorials, practical and case study. Students will be evaluated through tests, assignments, presentation and final examination.

List of text/reference books:

1. Madell, J.R. & Flexer, C. (Eds.), *Pediatric Audiology: Diagnosis, Technology, and Management*. USA: Thieme, 2008.
2. Madell, J.R. & Flexer, C. (Eds.), *Pediatric Audiology Casebook*. USA: Thieme, 2011.
3. Northern, J.L. & Downs, M.P., *Hearing in Children* (6th Ed.). San Diego: Plural Publishing Inc., 2013.
4. Seewald, R. & Tharpe, A.M., *Comprehensive Handbook of Pediatric Audiology*. San Diego: Plural Publishing Inc., 2010
5. Niparko, J.K. (Ed.), *Cochlear Implants: Principles and Practices* (2nd Ed.): Lippincott Williams & Wilkins, 2009.

GTA209/3-Audiology Clinic I

This course introduces students to the fundamental audiology clinical practice. It includes preparation of the students to the clinic and clinical practicum. Students will be taught about clinical communication, reflective practice and review of the audiology tests and its integration during the first half of semester. In the second half of the semester, students will be supervised by experienced audiologist on weekly basis. Students are expected to observe the clinical session and conduct fundamental tests on cooperative patients. This course will be taught via lectures, tutorials, problem-based learning (PBL), practical, and supervision during practicum. Students will be assessed through test, practical report, report (reflective journal), logbook, practicum and final examination.

List of text/reference books:

1. Katz, J., Medwetsky, L., Burkard, R., & Hood, L. (Eds.), *Handbook of Clinical Audiology*. USA: Lippincott Williams & Wilkins, 2009.
2. Taylor, B., *Reflective Practice for Health Care Professionals: A Practical Guide* (3rd Ed.). Open University Press, 2010.
3. Stach, B.A., *Clinical Audiology: An Introduction* (2nd Ed.) Singular Publishing, 2010.
4. Goldfarb, R. & Serpanos, Y.C., *Professional Writing in Speech-language Pathology and Audiology Workbook*. San Diego: Plural Publishing Inc., 2011
5. Liptak, J.J., Leutenberg and Sippola, E., *The Communication Skills Workbook*. USA: Whole Person Associates, Inc., 2008
6. Ghaye, T., *Teaching and Learning through Reflective Practice: A Practical Guide for Positive Action* (2nd Ed.). Routledge, 2011.

GTA210/3-Otology

This course introduces students to principles of clinical otology, pathologies related to hearing and balance system, otological and audiological examinations, other disorders related ear, nose and throat as well basic health management of patients with otological disorders. This course also covers the relationship between ear pathologies and otological and audiological test results. This course will be taught via lectures, tutorials and practical sessions. Students will be assessed through tests, presentation, practical reports and final examination.

List of text/reference books:

1. Browning, G.G., *Clinical Otology and Audiology* (2nd Ed.). Oxford: Butterworth Heinemann, 1998.
2. Berlin, C.I., and Keats, B.J.B., *Genetics and Hearing Loss*. San Diego: Singular Publishing Group, Inc., 2000.
3. Canalis, R.F. and Lambert, P.R.H. (Eds.), *Ear: Comprehensive Otology*. Maryland: Lippincott Williams & Wilkins, 2000.
4. Rockeinstein, M.J., *Comprehensive Review of Otolaryngology*. Philadelphia: Elsevier, Inc., 2004.

5. Roush, J. (Ed.), *Screening for Hearing Loss and Otitis Media in Children*. San Diego: Singular Publishing Group, Inc
6. Tyler, R.S., *Tinnitus Handbook*. San Diego: Singular Publishing Group, Inc., 2000.

GTA211/2-Hearing Screening

This course introduces students to the concepts of hearing screening including its principle, objectives and methods of screening tests of all stages of life. It also covers the sensitivity and specificity, advantages and disadvantages of various hearing screening tests as well as the importance of collaboration for a successful hearing screening program. This course will be taught via lectures, tutorials and practical sessions. Students will be assessed through test, presentation, practical reports and final examination.

List of text/reference books:

1. Hall, J.W., *New Handbook of Auditory Evoked Responses*. Boston, MA : Pearson, 2007.
2. Katz, J., Burkard, R., Hood, L. & Medwetsky, L., *Handbook of Clinical Audiology*. Philadelphia: Lippincott Williams & Wilkins, 2009.
3. Seewald, R. & Tharpe, A.M., *Comprehensive Handbook of Pediatric Audiology*. San Diego: Plural Publishing Inc., 2010.
4. Madell, J.R. & Flexer, C. (Eds.), *Pediatric Audiology: Diagnosis, Technology, and Management*. USA: Thieme, 2008.

GTA212/3-Basic Hearing Amplification Technology

This course introduces students to the fundamental aspects of hearing amplification system including its concept, types, components, system, prescription and electroacoustic measurement of hearing aids, and earmolds, ear shells, and coupling systems. It also covers the importance of bilateral fitting, patient education and counselling for hearing aids wearers. This course will be taught via lectures, tutorials and practical. Students will be assessed through test, assignment, practical report and final examination.

List of text/reference books:

1. Dillon, H., *Hearing Aids* (2nd Ed.). Hong Kong: Thieme, 2012.
2. Ricketts, T., Bentler, R., & Mueller, H. G. (Eds.), *Modern Hearing Aids Function, Features, and Advanced Algorithms*. San Diego: Plural Publishing Inc., 2014.
3. Mueller, H.G., Ricketts, T., & Bentler, R. (Eds.), *Modern Hearing Aids Pre-Fitting Testing and Selection Considerations*. San Diego: Plural Publishing Inc., 2012.
4. Bentler, R., Mueller, H.G., & Ricketts, T., (Eds.), *Modern Hearing Aids Verification, Outcome Measures, and Follow-Up*. San Diego: Plural Publishing Inc., 2013.
5. Taylor, B., & Mueller, H.G., *Fitting and Dispensing Hearing Aids*. San Diego: Plural Publishing Inc., 2011.

GTA213/3-Electrophysiological Tests

This course introduces students to different types of electrophysiological tests, fundamental test parameters, procedures to perform the tests and factors that can affect the electrophysiological test results. It also covers the relationship between the test results and ear pathologies. This course will be taught via lectures, tutorials and practical sessions. Students will be assessed through tests, presentation, practical reports and final exam.

List of text/reference books:

1. Hall, J. W., *New Handbook of Auditory Evoked Responses*. Boston, Mass.: Pearson, 2007.
2. Katz, J., Burkard, R., Hood, L. & Medwetsky, L., *Handbook of Clinical Audiology*. Philadelphia: Lippincott Williams & Wilkins, 2009.

GTB204/3-Molecular Biology Techniques

This course introduces students to fundamental knowledge and application of molecular biology technologies in research and diagnostic laboratory. It covers all aspects of molecular genetics, chemical bonding, genetic microbe, modification enzymes, digestion enzyme, cloning genotype vehicle, genes manipulation methods, molecular cloning, protein/gene sequencing, PCR and post-PCR technique, microarray, protein interaction, Western/Northern/Far-Western analysis, protein-DNA interaction, yeast two hybrid system and transgenic technology. Students will be trained to use Bioinformatics software such as Gene-being through the cloning simulation project. The course will be taught via lectures, discussion and practical sessions. The students will be assessed through assignment, practical session, practical test, test and final examination.

List of text/reference books:

1. Dale, J.W. & Park, S.F., *Molecular Genetics of Bacteria* (4th Ed.). West Sussex: John Wiley and Sons, 2004.
2. Primrose, S.B. & Twyman, R.M., *Principles of Gene Manipulation and Genomics* (7th Ed.). Oxford: Blackwell Scientific Publications, 2006.
3. Ream, W. & Field, K.G., *Molecular Biology Techniques: An Intensive Laboratory Course*. Vikas. E-Book, 2008.
4. Sambrook, J. & Russell, D., *Molecular Cloning: A Laboratory Manual* (3rd Ed.). USA: Cold Spring Harbor Laboratory Press, 2001.
5. Watson, J.D. & Bell, S.P., *Molecular Biology of the Gene* (6th Ed.). San Francisco: Pearson Benjamin Cummings, 2008.

GTB212/3-Basic Microbiology

This course introduces students to basic principles in microbiology which covers bacteria, viruses, fungus and parasites. It covers microbial diversity, genetic, physiology, biochemistry, reproduction, host-microorganism interaction and basic clinical microbiology. Health and safety aspects will be highlighted. The course will be conducted via lecture, practical and seminar. The students will be assessed through tests, assignments, presentation and final examination.

List of text/reference books:

1. Black, J.G., *Microbiology: Principles and Explorations* (6th Ed.). New York: John Wiley & sons, Inc., 2006.
2. Nester, E.W., Anderson, D.G., Roberts, C.E. & Nester, M.T., *Microbiology, A Human Perspective* (6th Ed). McGraw Hill, USA, 2009.
3. Talaro, K.P., *Foundations in Microbiology* (6th Ed.). New York: McGraw-Hill Companies, 2008.
4. Willey, J.M., Sherwood, L.M. & Woolverton, C.J.. *Prescott, Harley, and Klein's Microbiology* (8th Ed.). New York: McGraw-Hill Companies, 2011.

GTB218/3-Immunology II

This course introduces students to advanced knowledge of immunology in health and disease. The involvement of immunological mechanisms in various diseases such as autoimmune diseases, immunodeficiency, HIV infection, transplantation and tumour immunology will be discussed. The students will also be exposed to the principles and immunological methods used in research and diagnostic immunology laboratories such as immunoprecipitation and agglutination reactions, ELISA, immunofluorescence, immunoenzymatic staining and flow cytometry as well as the production of monoclonal and polyclonal antibodies. The course will be conducted via lecture, practical and discussion. The students will be assessed through tests, OSPE, assignments, presentation and final examination.

List of text/reference books:

1. Abbas, A.K., Lichtman, A.H. & Pillai, S., *Cellular and Molecular Immunology* (8th Ed.). Philadelphia: W.B. Saunders, Co., 2014.
2. Abbas, A.K., Lichtman, A.H. & Pillai, S., *Basic Immunology: Functions and Disorders of the Immune System* (4th Ed.). Philadelphia: W.B. Saunders, Co., 2012.
3. Janeway, C.A., Travers, P., Walport, M. & Shlomchik, M., *Immunobiology: The Immune System in Health and Disease* (7th Ed.). New York: Garland Publishing Co., 2007.
4. Male, D., Brostoff, J., Roth, D.B. & Roitt, I., *Immunology* (8th Ed.). Edinburgh: Mosby, 2012.
5. Sompayrac, L.M., *How the Immune System Works* (4th Ed.) UK: John Wiley & Sons Ltd, 2012.

GTB219/3-Pharmacology I

This course introduces students to basic knowledge and principles of pharmacology, uses and effects of drugs to human health and quality of life. It covers fundamental aspects such as pharmacokinetics, pharmacodynamics, cellular pharmacology, biochemistry, physiology, quantitative pharmacology and systemic pharmacology (autonomic and central nervous system, cardiovascular, respiratory, gastrointestinal, endocrine, antimicrobials and anti-inflammatory). This course will be conducted through lectures, tutorial and practical approaches. Students will be assessed through tests, assignments, practical reports, presentation and final examination.

List of text/reference books:

1. Harvey, R.A., Clark, M.A., Finkel, R., Ray, J.A. & Whalen, K., *Lippincott's Illustrated Reviews* (5th Ed.). Philadelphia: Lippincott Williams & Wilkins, 2011.
2. Hitner, H. & Nagle, B.T., *Pharmacology: An Introduction* (6th Ed.). New York: McGraw-Hill Higher Education, 2011.
3. Katzung, B.G., Masters, S.B. & Trevor, A.J., *Basic and Clinical Pharmacology* (12th Ed.). New York: McGraw-Hill Professional Publishing, 2012.
4. Rang, H.P., Ritter, J.M. & Flower, R.J. & Henderson, G., *Rang and Dale's Pharmacology*. (7th Ed.). Philadelphia: Churchill Livingstone, 2011.
5. Tripathy, K.D., *Essentials of Medical Pharmacology* (7th Ed.). New Delhi: Jaypee Brothers, 2013.

GTB221/3-Basic Haematology

This course introduces students to the concept and knowledge of basic principles in haematology. It covers topics pertaining structure and function of blood cells, haematopoiesis, introduction to anaemia and haemostasis. The course will be conducted via integrated teaching and learning approach, which comprise of lectures, practical, seminar, intellectual discussion or mini project regarding health awareness specifically in the area of hematology. The students will be continuously evaluated on theoretical knowledge, practical skills (SPOT/OSPE), presentation on health sustainability and final examination. At the end of the course, the students will be equipped with the concepts and knowledge for the best practices in discipline of basic haematology.

List of text/reference books:

1. Bain, B.J. Bates, I., Laffan, M.A. & Lewis S.M., *Dacie and Lewis Practical Haematology* (11th Ed.). Churchill Livingstone Elsevier, 2012.
2. Harmening, D.M., *Clinical Hematology and Fundamentals of Hemostasis* (5th Ed.). Philadelphia: F.A. Davis Co., 2008.
3. Hoffbrand, A.V. & Moss, P.A.H., *Essential Haematology* (6th Ed.). Wiley-Blackwell, 2011.
4. Hoffbrand, A.V., Catovsky, D., Tuddenham, E.G.D., & Green, A.R., *Postgraduate Haematology* (6th Ed.). Wiley-Blackwell, 2010.

- Lewis, S.M., Bain, B.J. & Bates, I., *Dacie and Lewis Practical Haematology* (10th Ed.). Philadelphia: Elsevier Science, 2007.
- Moore, G., Knight, G. & Blann, A., *Haematology (Fundamentals of Biomedical Science)*. Oxford University Press, 2010
- Rodak, B.F., Fritsma, G.A. & Doig, K., *Haematology: Clinical Principles and Applications* (3rd Ed.). Philadelphia: Elsevier Science, 2007.

GTB222/4-Pathology

This course introduces students to the scope and history of pathology, organization and nomenclature used in pathology, fundamental mechanisms and the types of cell injuries, inflammation, haemodynamic disturbances, neoplasia, as well as health diagnostic tests conducted in the pathology laboratory such as histopathology, cytology, enzyme histochemistry and immunohistochemistry. Students are provided with practical knowledge on tissue fixation, processing, microtomy, staining and museum techniques. They will also have a short placement in the PPSP pathology laboratory to be familiarized with the best practice of actual environment in a service-offering pathology laboratory. This course is conducted through lectures, tutorials, practical and discussions. The students are evaluated through tests, assignment, laboratory reports and final examination.

List of text/reference books:

- Bancroft, J.D. & Gamble, M., *Theory and Practice of Histological Techniques* (5th Ed.). London: Churchill Livingstone, 2002.
- Kumar, V., Abbas, K. & Aster, C., *Robbins Basic Pathology* (9th Ed.). Philadelphia: Saunders, Elsevier, 2013.
- Kumar, V., Abbas, K., Fausto, N. & Aster, C., *Robbins and Cotran Pathologic Basis of Disease* (8th Ed.). Philadelphia: Saunders, Elsevier, 2010.
- Underwood, J.C.E and Cross, S.S, *General and Systemic Pathology* (5th Ed). London :Churchill Livingstone, E Isevier
- Young, B., Lowe, J.S., Stevens, A. & Heath, J.W., *Wheater's Functional Histology: A Text and Colour Atlas* (5th Ed). London : Churchill Livingstone, E Isevier, 2006.

GTB224/3-Imunology I

This course introduces students to fundamental knowledge in immunology which include the concept of immunity and the immune response. It covers the types of lymphoid tissues and cells, the characteristics, types and functions of various molecules such as immunoglobulins, cytokines and the various components of the complement system as well as immune cells such as B and T lymphocytes. The concepts of antigen, antigenicity and immunogenicity, the importance of vaccination (immunisation) and its impact on human health as well as the basic concept of immunopathology and the use of antigen-antibody interactions in research and diagnosis will also be discussed. The course will be conducted via lecture, practical and seminar. The students will be assessed through tests, assignments, presentation and final examination.

List of text/reference books:

1. Abbas, A.K., Lichtman, A.H. & Pillai, S., *Basic Immunology: Functions and Disorders of the Immune System* (4th Ed.). Philadelphia: W.B. Saunders, Co., 2012.
2. Abbas, A.K., Lichtman, A.H. & Pillai, S., *Cellular and Molecular Immunology* (8th Ed.). Philadelphia: W.B. Saunders, Co., 2014.
3. Clancy, J., *Basic Concepts in Immunology*. Boston: McGraw Hill, 2006.
4. Levinson, W. & Jawetz, E., *Medical Microbiology and Immunology* (7th Ed.) Boston: McGraw Hill, 2002.
5. Male, D., Brostoff, J., Roth, D.B. & Roitt, I., *Immunology* (8th Ed.). Edinburgh: Mosby, 2012.
6. Sompayrac, L.M., *How the Immune System Works* (4th Ed.) UK: John Wiley & Sons Ltd, 2012.

GTB225/3-Epidemiology

This course aims to provide students a comprehensive introduction to the principles and methods of epidemiology which covers the causes of disease and how epidemiology can be used for the prevention of disease. It also covers health promotion, including environmental and occupational health. This course will be taught through lectures and tutorials. The students will be assessed through tests, quiz, assignments, and final examination.

List of text/reference books:

1. Ray M. Merrill., *Introduction to Epidemiology* (6th Ed.). Jones & Bartlett Learning, 2013.
2. Gordis, L., *Epidmiology* (4th Ed.). Saunders Elsevier, 2009.
3. Timmreck, T.C., *Introduction to Epidemiology* (3rd Ed.). MA: Jones & Bartlett Publishers, Inc., 2002.
4. Wasserheil-Smoller, S., *Biotatistics and Epidemiology: A Primer for Health Professionals* (3rd Ed.). New York: Springer Verlag, 2004.
5. Webb, P. & Bain, C., *Essential Epidemiology: An Introduction for Students and Health Professionals* (2nd Ed.). Cambridge University Press, 2011.

GTD212/3-Dietetics Skills and Communication

This course focuses on the theoretical and practical aspects of dietetics and communication skills. This course will also enhance individual skills in communicating with individual clients and a group of clients both verbally and in written form, establishing rapport with the health care team, obtaining and evaluating food records, planning menus, using relevant equations for the determining of calories, documentation of nutritional care process using the SOAP and ADIME formats and other educational tools. This course also exposes students to many activities such as development of educational tools, conducting mock diet interviews, case presentations, case discussions and case report writing. The students will also attend various tutorial sessions emphasizing on the aspects of nutritional education and cultural factors which influences the patients' diet.

List of text/reference books:

1. Bauer, K.D and Sokolik, C.A., *Basic Nutrition Counseling Skills Development*, America Wadsworth Group, 2002.
2. Alpers, D.H., Stenson, W.F. and Bier, D.M., *Manual of Nutritional Therapeutics*, (4th Ed.), Lippincott Williams and Wilkins, 2008.
3. Winterfeldt, E.A. Bogle, M.L and Lea L. *Dietetics: Practical and Future Trends*, Wadsworth Publisher Co. 2005.

GTF200/3-Criminalistics

This course introduces students to basic elements of forensic science. It provides information on physical evidence and its collection and preservation from crime scenes. Impression evidence--finger prints, ear and lip prints, foot prints, tool marks, and tyre prints-- used in identification of individuals and objects is taught. A brief account on trace evidence materials such as dust, glass, soil, fibres and hairs too is included. Introductory topics on biological evidence, firearm identification, explosives, and questioned documents also form part of the syllabus. The students also learn principles of photographic techniques, digital cameras, microscopy, and uses of invisible radiation (UV, IR and X-rays) in crime detection. The contents of the course are interdisciplinary that would enable the students to have sufficient knowledge and intellectual level to take up the advance forensic courses in their third and fourth years. The course will be taught via lectures, tutorial, practical and discussion. Students will be assessed through tests, assignments, practical reports and final examination.

List of text/reference books:

1. Kaye B.H., *Science and the Detective*, VCH, New York, Wiley, 1995.
2. Houck M.M. & Siegel J.A., *Fundamentals of Forensic Science* (2nd Ed.). Academic Press, 2010.
3. Stuart H. James and Jon J. Nordby, *Forensic Science, An Introduction to Scientific and Investigative Techniques*, (3rd Ed.), CRC Press, 2009.
4. Bertino, A.J., *Forensic Science: Fundamentals and Investigations*. Cengage Learning., 2008.
5. Thomson, T. & Black, S., *Forensic Human Identification: An Introduction*. CRC Press, 2006.

GTF204/3-Forensic Psychology

This course introduces students to behavioural aspects and human cognitive in crime from the perspectives of perpetrators and victims. Discussions will be concentrated on multifarious forms of crimes, juvenile issues, and adult criminals. The role of forensic psychologists, the interdisciplinary connections between psychology and law, the use of psychological measurements, treatment and rehabilitation will also be clarified. The course will be taught via lectures, seminar and discussion. Students will be assessed through tests, assignments, seminar and final examination.

List of text/reference books:

1. Matthew, T.H., *Forensic Psychology* (2nd Ed.). John Wiley & Sons, 2013.
2. Davies, G.M. & Beech, A.R., *Forensic Psychology: Crime, Justice, Law, Interventions* (2nd Ed.). John Wiley & Sons, 2012.
3. Turvey B., *Criminal Profiling - An Introduction to Behavioral Evidence Analysis*. Academic Press, London, 2002.

GTF206/3-Organic Chemistry II

This course introduces students to aromaticity, reactions of benzene and substituted benzenes, reactions of carbonyl compounds (carboxylic acids and their derivatives, aldehydes and ketones) with oxygen and nitrogen nucleophiles, carbon nucleophiles and the hydride ion. The course also covers the identification of organic compounds using integrated techniques, such as mass spectrometry, infrared spectroscopy, ultraviolet/visible spectroscopy and NMR. The course will be taught via lectures, tutorials and discussion. Students will be assessed through test, assignments, presentation of work from internet sources, reading materials or research articles, and final examination.

Main references supporting this course:

1. Wade, Jr. L.G., *Organic Chemistry* (8th Ed.). Pearson Prentice Hall, USA 2013.
2. Solomons T.W.G. & Fryhle C.B., *Organic Chemistry* (10th Ed.). John Wiley & Sons, Inc., 2011.
3. Smith J.G., *Organic Chemistry* (3rd Ed.). McGraw-Hill, 2011.

GTF207/2-Analytical Chemistry Practical

This course exposes student to various analytical chemistry practical such as absorption spectroscopy for determination of iron complex with 1,10-phenanthroline, application of polarographic technique for determination of ascorbic acid in fruit juice samples, voltammetric technique for determination of plumbum in water samples, separation of mixing acid using ion exchange resin, electrogravimetry technique for determination of copper in unknown sample, application of infrared spectrometry technique for quantitative analysis of m-xylene dan p-xylene in xylene mixing sample, application of gas chromatography (GC) for separation and quantitative identification of a mixing solution of cyclohexane, methylene chloride in toluene, HPLC technique for separation of hydrocarbon mixture, visible spectrometry technique for determination of mole ratio of 1,10-phenanthroline in complex form, atomic absorption spectrometry for determination of calcium and also determination of sodium using flame spectroscopy technique. The course will be taught via briefings and practical sessions, where students are encouraged in group collaboration to solve problems. Students will be assessed through test and practical reports.

List of text/reference books:

1. Shirley B. & Michelle C., *Forensic Application of High Pressure Liquid Chromatography*. USA: CRP Press/Taylor and Francis, 2010
2. Christian G.D., *Analytical Chemistry* (6th Ed.). John Wiley and Sons, 2004.
3. Aguilar, M. *Solvent Extraction and Liquid Membranes*. New York: Marcel Dekker, 2004.
4. Robert, L.G. & Eugene, F.B., *Modern Practice of Gas Chromatography* (4th Ed.) Hoboken, NJ: Wiley-Interscience, 2004.
5. Hoffmann, E. *Mass Spectrometry: Principles and Applications* (3rd Ed.) West Sussex: John Wiley & Sons, Ltd., 2007
6. Trimm H.H., *Analytical Chemistry: Methods and Applications*. Apple Academic Press, 2011.
7. Kenkel J., *Analytical Chemistry for Technicians* (4th Ed.). CRC Press, 2014.

GTF210/3-Material Chemistry

This course introduces students to the characteristics of materials, processing and the uses of metals, alloys, polymers, ceramics and composites as well as their sustainability uses. It also covers the importance of material chemistry in daily life to ensure the quality of life, and its knowledge in forensic application and research. The course will be taught via lectures, tutorials and discussion. Students will be assessed through test, assignments and final examination.

List of text/reference books:

1. Allcock H.R., *Introduction to Materials Chemistry*, John Wiley & Sons, USA, 2008.
2. Callister W.D., *Material Science and Engineering: An Introduction* (8th Ed.). USA: John Wiley & Sons Inc., 2010.
3. Fahlman B.D., *Materials Chemistry* (2nd Ed.). New York: Springer, 2011.
4. Lewis P.R., Reynolds K. and Gagg C., *Forensic Materials Engineering*. Washington DC: CRC Press, 2004.
5. Temenoff J.S. & Mikos A.G., *Biomaterials: The Intersection of Biology and Material Science*. Pearson International Edition, 2008.

GTF212/4-Analytical Chemistry II

This course will introduce students to analytical chemistry knowledge and best practice that has not been covered in Analytical Chemistry I which include spectrochemistry topics such as introduction to spectrochemistry methods, instrumentation of optical spectrometry, molecular absorption spectrometry, molecular fluorescence spectroscopy and atomic spectroscopy. For absorption methods, it covers introduction of solvent extraction, gas chromatography and high performance liquid of chromatography (HPLC). Under electrochemistry methods, it covers new and innovative analysis that can be explored in potentiometry and voltammetry in water analysis. The course will be taught via lectures tutorials and discussion, where students are encouraged in group collaboration to solve problems. Students will be assessed through test, assignments and final examination.

List of text/reference books:

1. Niessen, W.M., *Liquid Chromatography--Mass Spectrometry* (3rd Ed.), Boca Raton: CRC/Taylor & Francis, 2006.
2. Hoffmann, E., *Mass Spectrometry: Principles and Applications* (3rd Ed.). West Sussex: John Wiley & Sons, Ltd., 2007.
3. Welz, B., *Atomic Absorption Spectrometry* (3rd Ed.). Weinheim: Wiley-VCH, 1999.
4. Aguilar, M., *Solvent Extraction and Liquid Membranes*. New York: Marcel Dekker, 2004.
5. Robert, L.G. & Eugene, F.B., *Modern Practice of Gas Chromatography* (4th Ed.), Hoboken, NJ: Wiley-Interscience, 2004.
6. Lough, W.J. & Wainer, I.W., *High Performance Liquid Chromatography: Fundamental, Principles and Practice*. London: Blackie Academic & Professional, 1996.
7. Mitra S., *Sample Preparation Technique in Analytical Chemistry*. USA:John Wiley, 2003
8. Gosser, D. K., *Cyclic Voltammetry Simulation and Analysis of Reaction Mechanisms*. Weinheim: VCH, 1993.

GTF213/3-Introduction to Criminology

This course provides knowledge on basic concepts and theories in criminology. This knowledge would enable students to understand issues and problems of specific crime clusters for example youth, environment, media, technology, and others. It also explores fundamental research on equality, human rights and security. The course will be taught via lectures, tutorial and discussion, Students will be assessed through assignments, report and final examination.

List of text/reference books:

1. Siegel, L.J., *Criminology: Theories, Patterns and Typologies* (11th Ed.). CA: Nadworth, 2012
2. Doerner, W.G and Lab, S.P., *Victimology* (6th Ed.). Anderson, 2011.
3. Berkan, S.E., *Criminology: A Sociological Understanding* (5th Ed.). Prentice Hall, 2011.

GTF214/3-Pollutions and Environmental Chemistry

This course introduces student to pollutant agents and environment which covers introduction to component of environment, including water, energy, health, agriculture and biodiversity as general, environmental quality act and water quality standard, nutrient and eutrofication, heavy metals, dissolved oxygen (DO) biology oxygen demand (BOD), chemical oxygen demand (COD), meteorology of air pollution, concept of water pollution, water and air chemical pollutants, distribution of air pollutant, fundamental environmental forensic and its current research. The course will be taught via lectures, tutorials and discussion. Students will be assessed through test, assignment, presentation and final examination.

List of text/reference books:

1. Daniel, B.B & Edward, A.K., *Environmental Science: Earth as a Living Planet*. USA : John Wiley & Sons, Inc., 2005.
2. William, P.C. and Barbara, W.S., *Environmental Science: A Global Concern*. USA: McGraw Hill, 1997.
3. Shradha, S., Manisha, S. & Ranjana, S., *A Text Book of Environmental Studies*. New Delhi: AITBS Publishers, 2005.
4. *Environmental Quality Act 1974 (Act 127) & Subsidiary Legislation*. Kuala Lumpur: International Law Book Services, 2007.
5. Suzanna, M. I., *Environmental Law in Malaysia*. Bangi: Penerbit UKM, 2006.
6. Winfield, A., *Environmental Chemistry*. Cambridge, UK: Cambridge University Press, 2000.
7. Roy, M.H., *Principles of Environmental Chemistry*. Cambridge, UK: RSC Publishing, 2007.

GTF215/3-Natural Product Chemistry

This course introduces students to the characteristics of materials, processing and the uses of metals, alloys, polymers, ceramics and composites as well as their sustainability uses. It also covers the importance of material chemistry in daily life to ensure the quality of life, and its knowledge in forensic application and research. The course will be taught via lectures, tutorials and discussion. Students will be assessed through test, assignments and final examination.

List of text/reference books:

1. Stanforth, S.P., *Natural Product Chemistry at a Glance*, Blackwell Publishing, 2006.
2. Torsell, K.B.G., *Natural Product Chemistry: Mechanic and Biosynthetic Approach to Secondary Metabolism*. John Wiley & Sons, 1982.
3. Sarker, S.D. and Nahar, L., *Chemistry for Pharmacy Students: General Organic and Natural Product Chemistry*. John Wiley & Sons, 2007.
4. Hornback, J. M., *Organic Chemistry*. Thomson Brooks/Cole, 2005.

GTJ205/4-Nursing Foundation III

This course introduces students to the nursing foundation III. It covers the concept related to activities of therapeutic interventions in nursing with emphasis on sustaining universal precaution, patient's right, and safety. This course is taught via student centered learning: lectures, small group discussion, e-learning, and practical sessions. Students will be assessed through assignment (e-learning), presentation, OSCE and final examination.

List of text/reference books:

1. Berman, A., Synder, S., Kozier, B. & Erb, G., *Fundamental of Nursing: Concepts, Process and Practice* (9th Ed.). New Jersey: Pearson, 2012.
2. deWit, S.C. & O’neill, P., *Fundamental Concepts and Skills for Nursing* (4th Ed.). St. Louis: Elsevier Saunders, 2014.
3. Estes, M.E., *Health Assessment & Physical Examination* (4th Ed.). New York: Delmar, 2010.
4. Smith, S.F., Duell, D.J., & Martin, B.C., *Clinical Nursing Skills: Basic to Advanced Skills* (8th Ed.). New Jersey: Pearson Edu., 2012.
5. White, L., Duncan, G., & Baurmle, G., *Foundations of Basic Nursing* (3rd Ed.). USA: Delmar, 2011.

GTJ210/3-Primary Health Care, Family and Community

This course introduces students to the concept of primary health care and community by incorporating biodiversity and environmental issues. It covers the management/administration of public health/population problems and strategies to overcome the problems. This course is taught via lectures and student centred learning; small group discussion and practical sessions. Students will be assessed through assignment, test, seminar and final examination.

List of text/reference books:

1. Allender, J.A., Rector, C. & Warner, K.D., *Community Health Nursing: Promoting & Protecting the Public Health* (7th Ed.). China: Lippincott Williams & Wilkins, 2010.
2. Clark, M. J., *Community Health Nursing: Advocacy for Population Health* (5th Ed.). New Jersey: Pearson Prentice Hall, 2008.
3. Maville, J. A. & Huerta, C. G., *Health Promotion in Nursing* (2nd Ed.). New York: Thomson Delmar Learning, 2008.

GTJ213/3-Nursing Foundation Practicum I

This course introduces student to Practicum Nursing Foundation I. It integrates skills in nursing process, health assessment, and activities of daily living with engagement of best practice. It also encourages cultural diversity and safety in nursing. Students will be assessed through practical tests and log book.

List of text/reference books:

1. Berman, A., Synder, S., Kozier, B., & Erb, G., *Fundamental of Nursing: Concepts, Process and Practice* (9th Ed.), New Jersey: Pearson, 2012.
2. deWit, S.C., & O’neill, P., *Fundamental Concepts and Skills for Nursing* (4th Ed.) St. Louis: Elsevier Saunders, 2014.
3. Potter, P.A., & Perry, A.G.P., *Fundamentals of Nursing* (7th Ed.). Singapore: Elsevier Mosby, 2011.

- Smith, S.F., Duell, D.J., & Martin, B.C., *Clinical Nursing Skills: Basic to Advanced Skills* (8th Ed.). New Jersey: Pearson Edu., 2012.
- White, L., Duncan, G. & Baurmle, G., *Foundations of Basic Nursing* (3rd Ed.). USA: Delmar, 2011.

GTJ214/3-Medical -Surgical Nursing I (Cardiovascular and Respiratory)

This course introduces students to medical-surgical management of patient's with cardiovascular and respiratory diseases. The nursing care incorporates the concept of patient-nurse partnership with multi-disciplinary approach. This course is taught via student centered learning: lectures, small group discussion, and practical sessions. Students will be assessed through assignment, OSCE and final examination.

List of text/reference books:

- Barbara, K.T., & Nancy, E.S., *Introductory Medical-Surgical Nursing*. Philadelphia: W.W. Lippincott, 2010.
- LeMone, P., Burke, K. & Bauldoff, G., *Medical-Surgical Nursing: Critical Thinking in Patient Care* (5th Ed.). New Jersey: Pearson Prentice Hall, 2013.
- Smeltzer, S.C., & Bare, B.G., Hinkle, J.L., & Cheever, K.H., *Brunner & Suddarth's Textbook of Medical-Surgical Nursing* (12th Ed.). Philadelphia: Lippincott William & Wilkins, 2010.
- Smith, S.F., Duell, D.J., & Martin, B.C., *Clinical Nursing Skills: Basic to Advanced Skills* (8th Ed.). New Jersey: Pearson Edu., 2012.

GTJ215/3-Medical-Surgical Nursing II (Gastroenterology and Nephro/ Urology)

This course introduces students to medical-surgical management of patient's with gastroenterology and nephron/ urology diseases. The nursing care incorporates the concept of patient-nurse partnership with multi-disciplinary approach. This is taught via student centered learning: lectures, small group discussion, and practical sessions. Students will be assessed through assignment, clinical report, OSCE and final examination.

List of text/reference books:

- Barbara, K.T. & Nancy, E.S., *Introductory Medical-Surgical Nursing*. Philadelphia: W.W. Lippincott, 2010.
- LeMone, P., Burke, K. & Bauldoff, G., *Medical-Surgical Nursing: Critical Thinking in Patient Care* (5th Ed.). New Jersey: Pearson Prentice Hall, 2013.
- Smeltzer, S.C., & Bare, B.G., Hinkle, J.L., & Cheever, K.H., *Brunner & Suddarth's Textbook of Medical-Surgical Nursing* (12th Ed.). Philadelphia: Lippincott William & Wilkins, 2010.
- Smith, S.F., Duell, D.J. & Martin, B.C., *Clinical Nursing Skills: Basic to Advanced Skills* (8th Ed.). New Jersey: Pearson Edu., 2012.

GTJ216/3-Obstetrics and Gynecology Nursing

This course introduces students to the theory and practices of obstetrics and gynecology nursing. It also covers maternal and newborn care. The nursing care incorporates the concept of patient-nurse partnership with multi-disciplinary approach. This course is taught via student centered learning: lectures, small group discussion, and practical sessions. Students will be assessed through assignment, OSCE and final examination.

List of text/reference books:

1. Beckham, C., Ling, F.W., Barzanksy, B.M., Herbert, W.N., Laube, D.W. & Smith, R.P., *Obstetrics and Gynecology* (6th Ed.). Philadelphia: Lippincott Williams & Wilkins Publishers, 2009.
2. Perry, S. E., Hockenberry, M. J., Lowdermil, D.L., & Wilson, D., *Maternal Child Nursing Care* (4th Ed.). Missouri: Mosby Elsevier, 2010.
3. Towle, M. A., *Maternal-Nnewborn Nursing Care*. New Jersey: Pearson Education, Inc., 2009.

GTJ217/2-Principles of Health Management

This course introduces students to the basic knowledge of health management principles with emphasis on transformation on current practice. It incorporates issues such as management concepts and evolutions, organizations process, basic functions of a manager, financial management, leadership, change, motivation, work group, team building, decision making, conflict resolution, job satisfaction and organization development. This course is taught via student centered learning: lectures and small group discussion. Students will be assessed through assignment, presentation, and final examination.

List of text/reference books:

1. Goldsmith, S.B., *Understanding Health Care Management: A Case Study Approach* (2nd Ed.). London: Jones & Bartlett Publishers, Inc., 2012.
2. Kelly, P., *Nursing Leadership and Management* (3rd Ed.). USA: International Edition, Delmar Cengage Learning Offices, Nelson Education, Ltd., 2012.
3. Marquis, B. L. & Huston, C.J., *Leadership Roles and Management Functions in Nursing Theory and Application* (6th Ed.), Philadelphia: Lippincott William & Wilkins, 2009.

GTK201/3-Occupational Safety

This course introduces student to various safety hazards knowledge at workplaces. Measures required to minimise risks of work injury due to these hazards will be discussed. Aspects of sustainability also highlighted through component of energy, health, agriculture, climate Change and disaster risk management, production and consumption, population and poverty. Content of this course is streamlined with content of module IV of the Safety and Health Officer course as regulated by the Department of Occupational Safety and Health (DOSH). This course will be conducted in the form of lectures, tutorials and field trips. Students will be tested with tests, quizzes, assignments, presentations and final examinations. Introduction to hazards, risk assessment and improvement measures are important basic concepts need to be understood by students in the context of job safety that takes into account the safety of employees, visitors and people who work in or the working environment.

List of text/reference books:

1. *Undang-Undang Malaysia. Akta Keselamatan Dan Kesihatan Pekerjaan 1994 dan Peraturan-Peraturan*, ILBS, 2005.
2. *Undang-Undang Malaysia. Akta Kilang Dan Jentera 1967 dan Peraturan-Peraturan*, ILBS, 2005.
3. Lingard H. & Rowlinson S. M., *Occupational Health And Safety In Construction Project Management*, Taylor & Francis, 2005.
4. Manuele F.A., *On The Practice Of Safety* (3rd Ed.). Wiley-IEEE, 2003.
5. Reese C. D., *Occupational Health And Safety Management: A Practical Approach*. CRC Press, 2003.
6. NIOSH., *Keselamatan Pekerjaan-Manual Kursus Pegawai Keselamatan Dan Kesihatan*, Modul 4, 2003.

GTK202/3-Pollution And Health

This course introduces students to environmental pollution and its impact on health. It also covers management and pollution control strategies pollutants. Emphasis is given to the problems of pollution prevailing in Malaysia customs. These include soil pollution, air pollution and chemical pollution. To ensure that students get a good exposure, this course also includes some elements of sustainability during teaching and learning. Elements that encompass the entire interdisciplinary environment are emphasized. Soil pollution, for example, is extended with a series of sampling in areas that have been identified. Aspects that cause soil pollution such as the elements of water, air, chemicals and geographical condition of a place also identified. In addition, the uses of soil for a variety of agricultural activities are discussed in greater depth. Special emphasis on the effects of some types of pollution on human health are taken into account and discussed during lectures and tutorial sessions. In addition, the pollution problems related to health, which is usually affected by climate change and disaster management also used as a topic of discussion during the lecture session. This course is delivered through lectures, field trips and practical (physical and chemical parameters of sampling environment). Students are assessed through assignments, seminar/seminar papers and final examination.

List of text/reference books:

1. Calhoun Y., *Water Pollution*. Chelsea House Pub., 2005.
2. Ganesan Kumar., *Air Toxics: Problems And Solution*. Gordon & Breach Science Publishers, 2004.
3. Mirsal I. A., *Soil Pollution: Origin, Monitoring & Remediation*. Springer Verlag, 2004.
4. Harrison R. M., *Pollution: Causes, Effects And Control* (4th Ed.). Royal Society of Chemistry, 2001.
5. Behar A., *Noise Control: A Primer*. San Diego, CA: Singular Pub-Group, 2000.
6. Glenn F. K., *Radiation Detection And Measurement*, John Wiley & Sons, 1999.

GTK203/3-Occupational Health

This course introduces types of occupational hazard knowledge which are physical, biological, chemical, ergonomic and psychosocial that could be harmful to worker's health. This course is also explains the methods for identification of the cause of exposure to those risks hazard, risk assessment and its preventive measures. The contents of the course are interdisciplinary that would enable the students to have sufficient knowledge and intellectual level to take up the advance of occupational problems as preparatory to the next study levels. This course is taught via lectures, practical and field visit. Students are assessed through report, laboratory report, assignments, presentation, tests and final examination.

List of text/reference books:

1. Barling J., Kelloway E. K. & Frone M. R., *Handbook Of Work Stress*. SAGE, 2004.
2. Koh D., Chia K.S. & Jeyaratnam J., *Textbook Of Occupational Medicine Practice* (2nd Ed.). Singapore: World Scientific Publishing Co Pte Ltd., 2001.
3. Sadhra S.S. & Rampal K.G., *Occupational Health: Risk Assessment And Management*. Oxford: Blackwell Science, 1999.
4. Stranks J.W., *Health And Safety At Work : Key Terms.*, Butterworth-Heinemann, 2002.
5. Westerholm P., *Professional Ethics In Occupational Health-Western European Perspectives*, Radcliffe Medical Press, 2007.
6. Westerholm P., Nilstun T. & Øvretveit J., *Practical Ethics In Occupational Health*. Radcliffe Medical Press, 2004.

GTK204/4-Environmental and Occupational Law

This course focuses on laws and enforcement of existing laws in Malaysia in relation to its environmental protection, occupational safety and health. Problems encountered in law enforcement will also be discussed. Students are also described in detail the legal requirements and the documentation involved and their implications. The course content is aligned with the content of Module II Course Occupational Health and Safety Officer as appointed by the Department of Occupational Safety and Health, Ministry of Human Resources, Malaysia. Environmental laws and regulations relating to food, insect and disease control, and municipal services were also discussed. This course is taught via

lectures, tutorial and case study discussion. Students are assessed through law case report, assignments, mock trial presentation, tests and final examination.

List of text/reference books:

1. Abraham R.H. et al., *Environmental Law and Policy: Nature, Law and Society*. Aspen Publishers, 2004.
2. *Akta Keselamatan & Kesihatan Pekerjaan 1994 (Akta 514) Dan Peraturan-Peraturan dan Perintah-Perintah*. International Law Book Services (ILBS), 2009.
3. *Destruction of Disease-Bearing Insects Act 1975 (Act 154)*. ILBS, 2001.
4. *Environmental Quality Act 1974 (Act 127) & Regulations, Rules & Orders*. ILBS, 2009.
5. *Food Act 1983 (Act 281) And Food Regulations 1985*. ILBS.
6. JKPP GP (BM)., *Manual Kursus Sijil Pegawai Keselamatan & Kesihatan, Modul II*. Institut Keselamatan dan Kesihatan Pekerjaan Negara, Malaysia, 2003.
7. Lazarus R. J., *The Making of Environmental Law*. University of Chicago Press, 2004.
8. *Local Government Act 1976 (Act 171)*. ILBS. 2001.
9. *Pesticides Act 1974 (Act 149)*. Percetakan Nasional Malaysia Berhad, 2006.
10. *Prevention and Control of Communicable Diseases Act 1988 (Act 342)*. ILBS, 2006.
11. *Street, Drainage and Building Act 1974 (Act 133)*. ILBS, 2000.
12. *Town and Country Planning Act 1976 (Act 172)*. ILBS, 2006.

GTN202/3-Principles of Food Preparation

This course will introduce students to food chemistry aspect and the basic cooking of various foods such as meat, chicken, fish, vegetables, cereals and bakery products, and also the aspect of cleanliness, sanitation and safety during food preparation. It also covers new technique in food preparation and factors which influence the texture, colour and sensory evaluation of foods. This course will be taught via lecture, practical and discussion session. Students will be assessed through continuous assessment, practical report and final examination.

List of text/reference books:

1. Brown A., *Understanding Food: Principles & Preparation* (4th Ed.). Thomson Wardsworth Pub., 2011.
2. Smith W. & Gisslen J.G., *Professional Cooking* (7th Ed.). New Jersey: John Wiley & Sons Inc, 2010.
3. Mizer D.A., Porter M., Sonner B. & Drummond K.E., *Food Preparation for the Professional* (3rd Ed.). USA: John Wiley & Sons Inc, 2000.

GTN207/3-Principles of Nutrition

This course focuses on the importance of essential nutrients and optimal nutrition in the growth process and human development. Students will be introduced to functions, needs and food sources for essential nutrients of the human diet. They will also learn the role of food and its relationship with the economy, psychology, sociology and culture. The students are expected to exhibit proper knowledge application and updates towards nutrition in terms of personal, family and community health.

List of text/reference book:

1. McGuire M. & Beerman K.A., *Nutritional Sciences: From Fundamentals to Food* (Custom Edition). Thomson Woodsworth, 2011.
2. Gibney M.J., Hester, H.V. and Kok F.J., *Introduction to Human Nutrition* (1st Ed.). Blackwell Sciences Limited, 2002.
3. Mahan L.K. & Arlin M., *Krause's Food, Nutrition and Diet Therapy* (11th Ed.). Philadelphia: Elsevier Science, 2003.
4. Boyle M.A. & Roth S.L., *Personal Nutrition* (8th Ed.). Thomson Learning, 2012.

GTN208/3-Nutritional Biochemistry

This course will introduce students to biochemical reactions and metabolism of several key nutrients of macronutrients and micronutrients such as vitamins and minerals, body fluid and electrolyte balance, inter-interaction between nutrients. It also covers the relationships between nutrients metabolism and its effects on health and disease occurrence such as obesity and chronic diseases as well as utilization and adaptation regulation of nutrients metabolism in maintaining human general health. This course will be taught via lecture and discussion session. Students will be assessed through continuous assessment, assignment, presentation and final examination.

List of text/reference books:

1. Gropper S.S. & Smith J.L., *Advanced Nutrition and Human Metabolism* (6th Ed.). USA: Thomson Wadsworth, 2012.
2. Kohlmeier M., *Nutrient Metabolism*. London, UK: Academic Press, 2015.
3. Shils M.E., Shike M., Ross A.C. and Caballero B., *Modern Nutrition in Health and Disease* (10th Ed.). Lippincott Williams and Wilkins, 2006.
4. Gibney M.J., Macdonald I.A. & Roche H.M., *Nutrition and Metabolism*. Blackwell Science Publishing, UK, 2003.

GTN213/4-Principles of Nutrition

This course introduces students to the structure and role of major macro and micro-nutrients in human health. It also covers function, requirement and source of each nutrient. This course will be taught via lectures and discussion. Students will be assessed through test, assignment and final examination.

List of text/reference book:

1. McGuire M. & Beerman K.A., *Nutritional Sciences: From Fundamentals to Food* (Custom Edition). Thomson Woodsworth, 2011.
2. Gibney M.J., Hester, H.V. and Kok F.J., *Introduction to Human Nutrition* (1st Ed.). Blackwell Sciences Limited, 2002.
3. Mahan L.K. & Arlin M., *Krause's Food, Nutrition and Diet Therapy* (11th Ed.). Philadelphia: Elsevier Science, 2003.
4. Boyle M.A. & Roth S.L., *Personal Nutrition* (8th Ed.). Thomson Learning, 2012.

GTN214/4-Nutrition in a Life Cycle

The course will introduce students to nutritional aspects related to human physical growth and development throughout life cycle and nutritional needs and requirements in different life cycle populations. It also covers the whole range of current issues of nutritional risks and disorders throughout the life cycle ranging from foetus to ageing as well as relationship between nutritional disorders and the occurrence of chronic diseases. This course will be taught via lectures and discussion session. Students will be assessed through continuous assessment, assignment, presentation and final examination.

List of text/reference books:

1. Sarlin J. & Edelstein S., *Essentials of Life Cycle Nutrition*. USA: Jones and Bartlett Publishers, 2010.
2. Brown J.E., Issacs J., Krinke B., Lechtenberg E. & Murtaugh M., *Nutrition Through the Life Cycle*. CA: Wadworth Group, 2013.
3. Shils M.E., Shike M., Ross A.C. & Caballero B., *Modern Nutrition in Health and Disease* (10th Ed.). Lippincott Williams and Wilkins, 2006.
4. Mann J. & Trustwell S., *Essentials of Human Nutrition* (4th Ed.). Oxford University Press, 2012.
5. Gibney M.J., Macdonald I.A. & Roche H.M., *Nutrition and Metabolism*. UK: Blackwell Science Publishing, 2003.

GTN215/3-Nutrition for Health and Fitness

This course introduces students to the role of nutrition in enhancing one's health, fitness and sport performance. It also covers the role of energy and nutrients as the key to all exercise and sports activities. Body composition and weight control will be discussed in relation to losing or gaining weight through diet and exercise. This course will be taught via lectures, tutorials and discussion. Students will be assessed through test, assignment, quiz and final examination.

List of text/reference books:

1. Williams M.H., *Nutrition for Health, Fitness & Sport* (10th Ed.). McGraw-Hill, 2013.
2. Manore M.M. & Thompson J.L., *Sport Nutrition for Health and Performance*. Human Kinetics, 2005.
3. Judy A. Driskell, Ira Wolinsky. *Nutritional concerns in recreation, exercise, and sport*. Boca Raton, 2009.

GTN216/4-Food Analysis

This course introduces students to sampling methods, preservation, processing of food samples for analysis and the principal involved in determining physicochemical properties of foods. It also covers chemical analyses include proximate, fat properties, the presence of preservatives, physical analyses include determination of colour and texture in foods. This course will be taught via student centred learning (SCL) lectures, tutorials, practical sessions and discussion. Students will be assessed through test, practical reports and final examination.

List of text/reference books:

1. Neilsen S., *Food Analysis* (4th Ed.). New York: Springer, 2014.
2. Pomeranz Y. & Meloan C.E., *Food Analysis: Theory and practice* (3rd Ed.). New York: Aspen Publishers, 2000.
3. Multon J.L., *Analysis of Food Constituents*. John Wiley & Sons, 1997.

GTN217/4-Assessment of Nutritional Status

This course introduces students to nutritional evaluation in the individual and community. It also covers direct and indirect methods of assessment of nutritional status, food calculation and nutrient intake, anthropometric measurement, dietary evaluation, biochemical evaluation and clinical assessment. The students will have to collect data and use reference standards for the different stages of age and classification criteria. This course will be taught via lectures, tutorials, practical sessions and discussion. Students will be assessed through tests, individual assignment, group assignment, practical reports and final examination.

List of text/reference books:

1. Lee R. & Neiman D., *Nutritional Assessment*. New York: McGraw-Hill, 2012.
2. Jelliffe D.B., *The Assessment of Nutritional Status in the Community*. Geneva: WHO, 2007.
3. Horwerde, E.S., *Laboratory Tests for the Assessment of Nutritional Status* (2nd Ed.). CRC Press, 1999.
4. Tee E.S. et al., *Nutrition Composition of Malaysian Food* (4th Ed.). Kuala Lumpur: Malaysian Food Composition Database Programme, 1997.
5. Bendich A. & Deckelbaum R.J. (Eds.), *Primary & Secondary Preventive Nutrition*. Totowa, NJ: Humana Press, 2010.

GTP202/3- Introduction to Speech and Language Disorders

This course introduces students to the fundamental theories of communication disorders. It covers basic procedures in the screening, assessment, and intervention of communication disorders cases. This course is taught via lectures, tutorials, and seminars. Students are assessed through assignment, presentation, quiz and final examination.

List of text/reference books:

1. Gillam, R.B., Marquardt, T.P. & Martin, F.N., *Communication Sciences and Disorders: From Science to Clinical Practice*. San Diego: Singular Publishing Group, 2010.
2. Hedge, M.N., *Introduction to Communicative Disorders*. Austin: Pro-ed, 2010.
3. Shames, G.H., Anderson, N.B., *Human Communication Disorders: An Introduction* (3rd Ed.). Boston: Allyn and Bacon, 2006.

GTP203/2- Speech Pathology Clinic I

This course trains students to the clinical procedure for history taking, formal and informal assessments, intervention techniques for speech and language disorders. It prepares student to the fundamental clinical skills, which is needed to qualify as a speech-language pathologist. This course also emphasizes critical thinking through clinical reflection sessions, and encourages creative thinking through the development of therapy materials. This course will be delivered through lectures, discussions, and clinical observation sessions. Students will be assessed through the material development, presentations, observation skills, and observation reports.

List of text/reference books:

1. Paul, R., *Introduction to Clinical Methods in Communication Disorders*. London: Paul H Brookes Pub. Co., 2002.
2. Owens, R.E., *Language Disorders: A Functional Approach to Assessment and Intervention* (4th Ed.). Boston: Allyn & Bacon, 2003.
3. Shipley, K.G. & McAfee, J.G., *Assessment in Speech-Language Pathology: A Resource Manual* (3rd Ed.). New York: Thomson Delmar Learning, 2004.

GTP207/2- Speech Pathology Clinic II

This course trains students to partially conduct clinical session under one to one supervision. The students are trained to design part of the assessment and intervention plans. In the clinical session, the students are required to administer some basic and simple procedures such case history interview session, rapport building with patients and assist the clinician-in-charge during assessment and intervention. This course is delivered through supervised clinical session and case discussion. Students are assessed on their clinical performance, log book, case history report and case presentation.

List of text/reference books:

1. Shipley, K.G. & McAfee, J.G., *Assessment in Speech-Language Pathology: A Resource Manual* (3rd Ed.). New York: Thompson Delmar Learning, 2004.
2. Philips, B.J. & Ruscello, D.M., *Differential Diagnosis in Speech-Language Pathology*. Massachusetts: Butterworth-Heinemann, 1998.
3. Hegde, M.N., *Pocket Guide to Assessment in Speech-Language Pathology*. London: Singular Publishing Group, 1998.

GTP209/2- Phonetics and Phonology

This course offers an in depth focus on the fundamental aspects of phonetics and segmental features of spoken language by referring to the International Phonetic Alphabet (IPA). It also emphasizes on the transcription practices and analysis of normal as well as dialectal variations in the Malay Language. This course is taught via lectures and practical sessions. Students are assessed through assignments, practical exercises and final examination.

List of text/reference books:

1. Ladefoged, P., *A Course of Phonetics* (6th Ed.). Fort Worth: Harcourt Ace Jovanovich, 2011.
2. Clark, J., Yallop, C., & Fletcher, J., *An Introduction to Phonetics and Phonology* (3rd Ed.). New Jersey: Blackwell Publishers, 2007.
3. Shriberg, L.D., & Kent, R.D., *Clinical Phonetics* (3rd Ed.). New York: Allyn & Bacon, 2002.
4. Edward, H.T., *Applied Phonetics: The Sounds of American English* (3rd Ed.). London: Thomson Delmar Learning, 2002.
5. Roach, P., *English Phonetics and Phonology: A Practical Course* (3rd Ed.). Cambridge: Cambridge University Press, 2003

GTP210/2- Clinical Linguistics

This course exposes students to various assessments of speech and language from the linguistic perspective with reference to the standard Malay language and dialectal variations. It also emphasizes on the application of knowledge in the management of speech pathology cases. This course is taught via lecture and problem-based learning. Students are assessed through quizz, assignment, and final examination.

List of text/reference books:

1. Boehm, J., Daley, G., Harvey, S., Hawkins, A., & Tsap, B., *LARSP (Language Assessment Remediation Screening Procedure)*. Users Manual, 2005.
2. Crystal, D., *Profiling Linguistic Disability*. London: Whurr, 1992.
3. Black, M., & Chiat, S., *Linguistics for Clinicians*. London: Arnold, 2003.

GTP211/3- Pediatrics for Hearing and Speech

This course introduces students to the important aspects of pediatric that are relevant to the field of audiology and speech pathology. Students learn about embryology; the pre, peri and post-natal processes and its complication; and the normal as well as the abnormal development of children. These include various syndromic cases. Inputs from other professionals such as psychiatric, paediatrician, geneticist and occupational therapist are also incorporated in this course to introduce the students with the concept of teamwork approach. The course is taught via lecture and tutorial. Students are assessed through quiz, assignments and final examination.

List of text/reference books:

1. Sadler, T.W., *Langman's Medical Embryology* (12th Ed.). Philadelphia: Wolters Kluwer Health/Lippincott Williams & Wilkins, 2012.
2. Haddad, D., Greene, S. & Oliver R., *Core Pediatrics and Child Health*. London: Churchill Livingstone, 2000.
4. Berry, C. (Ed), *Pediatric Pathology*. New York: Springer-Verlag, 1981.

GTP212/2- Abnormal Psychology

This course introduces students to abnormal psychology. It also covers diagnostic criteria and application DSM-V in identifying types of abnormal psychology and its effects on communication. This course is taught via lecture, tutorial and practical session. Students are assessed through assignment, presentation, quiz and final examination.

List of text/reference books:

1. Butcher, J., Mineka, S., & Hooley, J., *Abnormal Psychology* (14th Ed.). London: Pearson, 2010.
2. Halgin, R.P., & Whitbourne, S.K., *Abnormal Psychology: Clinical Perspectives on Psychological Disorders*. Dubuque: McGraw-Hill, 2007.
3. Durand, V.M., & Barlow, D.H., *Essentials of Abnormal Psychology* (4th Ed.). Pacific Grove: Wadsworth–Thompson Learning, 2006.
4. American Psychiatric Association, *Diagnostic and Statistical Manual of Mental Disorders* (5th Ed.). Arlington: American Psychiatric Association, 2013.
5. Davison, G. & Neale, J., *Abnormal Psychology* (8th Ed.). New York: John Wiley & Sons, Inc., 2003

GTP213/3- Paediatrics Language Disorders

This course discusses in depth regarding pediatric language disorders such as developmental receptive or/and expressive language disorders. It also covers on methods of assessment and principles of interventions in managing individuals with these types of language disorders. This course is taught via lecture, tutorial and problem based learning. Students are assessed through assignment, presentation, quiz and final examination.

List of text/reference books:

1. Reed, V., *An introduction to Children With Language Disorders* (3rd Ed.). Boston: Pearson/ Allyn and Bacon, 2005.
2. Owens, R.E., *Language Disorders: A Functional Approach to Assessment and Intervention* (5th Ed.). Boston: Allyn and Bacon, 2009.
3. Vinson, B.P., *Language Disorders Across the Lifespan: An Introduction* (2nd Ed.). San Diego: Singular Publishing Group, 2008.
4. Paul, R., *Language Disorders From Infancy Through Adolescence: Assessment and Intervention* (3rd Ed.). St. Louis: Mosby, 2006.

GTP214/3- Speech Sound Disorders

This course prepares students in managing speech sounds disorder cases in their clinical practice. It covers on the fundamental aspects and characteristics of articulation disorders, cleft speech, phonological disorders and childhood apraxia of speech. The assessment and intervention techniques are also emphasized in this course. This course is taught via lecture, tutorial and problem based learning. Students are assessed through assignment, presentation, quiz and final examination.

List of text/reference books:

1. Gordon-Brannan, M. E. & Weiss, C. E., *Clinical Management of Articulatory and Phonologic Disorders* (3rd Ed.). Baltimore: Lippincott Williams & Wilkins, 2007.
2. Bleile, K. M., *The Manual of Speech Sound Disorders: A Book for Students and Clinicians* (3rd Ed). Stamford, CT: Cengage Learning, 2014.
3. Bernthal, J. E. & Bankson, N. W., *Articulation and Phonological Disorders* (6th Ed.). Boston: Allyn and Bacon, 2008.
4. Peterson-Falzone, S. J., Hardin-Jones, M. A. & Karnell, M. P., *Cleft Palate Speech* (4th Ed.). St. Louis: Mosby, 2009.
5. Russell, J. & Albery, J., *Practical Intervention for Cleft Palate Speech*. Bicester, UK: Speechmark, 2005

GTP215/3- Hearing Impairment

This course focuses on the fundamental theories of hearing impairment and its rehabilitation. It emphasizes on paediatrics aural re/habilitation with an additional exposure on adults' aural rehabilitation. This course is taught via lecture, demonstration and problem based learning. Students are assessed through assignment report, test, presentation and final examination.

List of text/reference books:

1. Schow, R. L. & Nerbonne, M. A., *Introduction to Audiologic Rehabilitation* (5th Ed.). Boston: Allyn & Bacon, 2006.
2. Tye-Murray, N., *Foundation of Aural Rehabilitation: Children, Adults and Their Family* (3rd Ed.). San Diego: Singular Publishing Group, 2008.
3. Doyle, J., *Practical Audiology for Speech Language Therapists*. London: Whurr Publisher, 2005.

GTP216/2- Psycholinguistics

This is an advanced course in linguistics that discusses the metalinguistic, psychological and neurobiological processes in the acquisition, understanding and collaborative use of language. The topics covered are language processing and production, first and second language acquisition and bilingualism. This course also emphasises on the integration of this knowledge into the field of speech pathology. This course is taught via lecture, tutorial and group discussion. Students are assessed through assignment, quiz and final examination.

List of text/reference books:

1. Menn, L., *Psycholinguistics: Introduction and Application*. San Diego: Plural Publishing, 2010.
2. Altmann, G.T.M., *Psycholinguistics Critical Concepts in Psychology*. London: Routledge, 2002.
3. Field, J., *Psycholinguistics: A resource book for students*. London: Routledge, 2003.

GTS201/3-Exercise Physiology

This course introduces students to physiological response in exercise and sports. This course will provide students knowledge on basics of diverse physiological systems and their differential impacts on exercise and sports adjustments and adaptations. The discussions include the effects of training and exercise on various systems such as cardiorespiratory, muscular, endocrine, metabolic systems as well as bioenergetics. This course will be taught via lectures and practical sessions that integrates fundamental knowledge into application. Students will be assessed through test, practical reports and final examination.

List of text/reference books:

1. Powers S.K. & Howley E.T., *Exercise Physiology: Theory and Application to Fitness and Performance* (8th Ed.). New York: McGraw-Hill, 2012.
2. Katch, V.L., Katch, F.I. & McArdle, W.D., *Essential of Exercise Physiology* (4th Ed.). Philadelphia: Lippincott Williams & Wilkins, 2011.
3. Sewell D., Watkins P. and Griffin M., *Sports and Exercise Science: An Introduction* (2nd Ed.). London: Hodder Education, 2012.
4. William J. Kraemer, Steven J. Fleck, Michael R. Deschenes., *Exercise Physiology: Integrating Theory and Application*. Philadelphia: Lippincott Williams & Wilkins, 2011

GTS202/2-First Aid and Cardiopulmonary Resuscitation (CPR)

This course introduces the students to first-aid techniques and cardiopulmonary resuscitation (CPR) methods used in various situations with the emphasis on sports related incidences.

List of text/reference books:

1. Flegel, M., *Sport First Aids*, (5th Ed.). Champaign, IL: Human Kinetics, 2014
2. Austin, M., Crawford, R. & Armstrong, V.J., *First Aid Manual: The Authorised Manual of St. John Ambulance, St. Andrew's First Aid and The British Red Cross* (10th Ed.). London: Dorling Kindersley, 2014
3. National Safety Council, *Standard First Aid, CPR, and AED* (2nd Rev Ed.). McGraw-Hill Companies, 2007
4. National Safety Council, *Pediatric First Aid, CPR and AED* (2nd Ed.). New York: McGraw-Hill Education, 2008.

GTS205/3-Sports Psychology

This course introduces students to the theories and concepts in the field of sports psychology. The course will emphasise on the significance of emotional, cognitive and social processes in understanding sporting behaviour. Apart from that, sports psychology also deals with mental health, community engagement, cultural conformity and well being. This course also covers the skills and strategies to be employed for enhancement in the ability of the athletes and in performance in competitive situations. Apart from that, study of sport psychology also deals with mental hygiene and well being. This course will be taught via lectures, discussions and practicals. Students will be assessed through tests, practical reports, presentations and final examination.

List of text/reference books:

1. Moran, A.P., *Sport and Exercise Psychology: A Critical Introduction*. New York, NY: Psychology Press, 2012.
2. Eklund R.C. and Tenenbaum G., *Handbook of Sport Psychology* (3rd Ed.). Hoboken, NJ: Wiley, 2007.
3. Roberts, G.C. & Treasure D.C., *Advances in Motivation in Sport and Exercise* (3rd Ed.). Champaign, IL: Human Kinetics, 2012.
4. Williams, J., *Applied Sport Psychology: Personal Growth to Peak Performance with Powerweb* (6th Ed.). Boston, MA: McGraw-Hill, 2010.

GTS206/3-Sports Training Methodology

This course introduces students to the principle of structured training based on scientific method. This course also introduces students to the planing and integration in practice transfer of knowledge into real world settings and analysis of athlete's achievement in sports. This course will be taught via lectures, tutorials and practicals. Students will be assessed through test, assignment, presentation and final examination.

List of text/reference books:

1. Bompa, T.O. and Haff, G., *Periodization: Theory and Methodology of Training* (5th Ed.). Champaign: Human Kinetics, 2009.
2. Krasilshcikov O., *Basics of Sports Training Methodology*. New Delhi: SSS Publications, 2014.
3. Brown L.E. & Chandler T.J., *Conditioning for Strenght and Human Performance*. Philadelphia: Wolters Kluwer/Lippincott Williams & Wilkins, 2013.
4. Cissik J., *Strength and Conditioning: A Concise Introduction*. London: Routledge, 2012.

GTS207/2-Principles and Training of Individual and Team Sports

Students will be introduced to basic skills and game play for some sports including badminton, soccer, volleyball and archery, by relating with the principles in kinesiology, physiology, biomechanic and socio-psychology. This course will also emphasise on skills acquisition, performance, competition and analysis of the games.

List of text/reference books:

1. Haywood K.M. & Lewis C.F., *Archery: Steps to Success* (4th Ed.). Champaign IL: Human Kinetic, 2014.
2. Lennox, J.W., *Soccer Skills and Drills*. Champaign IL: Human Kinetics, 2006.
3. Grice T., *Badminton: Steps to Success* (2nd Ed.). Champaign, IL: Human Kinetics, 2008.
4. Zartman, S., *Youth Volleyball: The Guide for Coaches, Parents, and Athletes*. Betterway Books, 2006.

GTS208/3-Kinanthropometry, Test and Measurements for Sport Science

This course introduces student to concepts of kinanthropometry for physical evaluation among athletes. This course also introduces students to the important of tests and measurements to determine athletes' health and fitness. This course will be taught via lecture and practical. Students will be assessed through test, practical report and final examination.

List of text/reference books:

1. Eston R.G. and Reilly T., *Kinanthropometry and Exercise Physiology Laboratory manual: Tests, Procedures and Data* (3rd Ed.). London, UK: Routledge, 2009.
2. Pescatello L.S., *ACSM's Guidelines for Exercise Testing and Prescription* (9th Ed.). Philadelphia, PA: Wolters Kluwer/ Lippincott Williams & Wilkins, 2014.
3. Lacy, A.C. and Hastad, D.N., *Measurement and Evaluation in Physical Education and Exercise Science* (5th Ed.). San Francisco, CA: Pearson Benjamin Cummings, 2007.
4. Morrow, Jr. J. R., *Measurement and Evaluation in Human Performance*. Champaign, IL: Human Kinetics, 2005.

GTX213/3-Basic Science of Nuclear Medicine

This course introduces students to the basic principles of nuclear medicine in health. Students will obtain basic knowledge of radioactivity, radioactive decays, radionuclide and radiopharmaceutical production methods, types of radiopharmaceuticals used in nuclear medicine. It also covers radiation detection and radiation monitoring statistics and internal dose calculations in nuclear medicine imaging. The course will be conducted via lectures, tutorials and student-centered learning like PBL. The students will be assessed through test, presentation and assignment and final examination.

List of text/reference books:

1. Saha, G.B., *Physics and Radiobiology of Nuclear Medicine* (3rd Ed.). Springer-Verlag, New York, 2006.
2. Chandra R., *Nuclear Medicine Physics: The Basics* (7th Ed.). Lippincott William & Wilkins, 2012.
3. Cherry, S.R., Sorenson, J.A. & Phelps, M.E., *Physics in Nuclear Medicine* (4th Ed.). Elsevier, 2012.

GTX214/3-Basic Science of Diagnostic Radiology

This course introduces students to the fundamentals of production of ionising radiation, interaction of x-ray with matter, grids, intensifying screens and radiographic films. It also covers manual film processing, automatic film processing and quality control of x-ray films. This course will be conducted via lecture/tutorial/SCL. The students will be assessed through continuous assessments, practical exercise, assignment and final examination.

List of text/reference books:

1. Hendee, W.R. & Ritenour E.R., *Medical Imaging Physics* (4th Ed.). John Wiley & Sons Inc., 2002.
2. Allisy-Roberts, P., *Farr's Physics for Medical Imaging* (2nd Ed.). Elsevier, 2008.
3. Bushberg, J.T., Seibert, J.A., Leidholdt, E.M. & Boone, J.M., *The Essential Physics of Medical Imaging* (3rd Ed.). Lippincott Williams and Wilkins, 2012.

GTX215/4-Medical Radiation Physics II

This course introduces students to the basic fundamentals of electricity, magnetism and modern physics and its role in the modern world and important connections with almost all areas of technological developments. The contribution of this physics knowledge to medical radiation research and practice will also be discussed. The course will be conducted via lecture and tutorial. The students will be assessed through test, quiz, assignment and final examination.

List of text/reference books:

1. Halliday, D., Resnick, R. and Walker, J., *Fundamentals of Physics* (10th Ed.). Wiley, 2014.
2. Taylor, J., *Modern Physics for Scientists and Engineers* (2nd Ed.). Pearson Prentice Hall, 2004.
3. Beiser, A., *Concepts of Modern Physics* (6th Ed.). McGraw-Hill, 2003.

GTX216/3-Radiographic Anatomy

This course introduces students to the knowledge of basic radiographic and sectional anatomy of the human body as perceived through the different imaging techniques of general radiography, fluoroscopy, computed tomography (CT), magnetic resonance imaging (MRI), ultrasonography, mammography and nuclear medicine imaging. The course will be conducted via lecture, tutorial, PBL and practical classes. The students will be assessed through test, presentation, OSPE and final examination.

List of text/reference books:

1. Ryan S., McNicholas M., & Eustace S.J., *Anatomy for Diagnostic Imaging* (3rd Ed.). Saunders-Elsevier, 2011.

2. Elis H., Logan B.M. & Dixon A.K., *Human Sectional Anatomy* (3rd Ed.). Hodder Arnold, 2009.
3. Roman L.E., *Computed Tomography for Technologists: A Comprehensive Text*. Wolter Kluwer Health/ Lippincott Williams & Wilkins, 2011.

GTX217/3-Mathematics of Radiation Science II

This course introduces students to the ordinary differential equations (ODE) of first and second orders, their solutions, meanings and methods of solutions that include Laplace transforms, series solution. It also introduces Fourier series and method of separation of variable for the partial differential equation (PDE). Simple applications relevant to medical imaging science and research in health that will be covered such as vibrating string, vibrating membrane. The course will be conducted via lecture and tutorial. The students will be assessed through test, quiz, assignment and final examination.

List of text/reference books:

1. Zill, D.G., *A First Course in Differential Equations with Modeling Applications* (10th Ed.). Brooks Cole, 2012.
2. Boyce, W.E. & DiPrima, R.C., *Elementary Differential Equations* (10th Ed.). Wiley, 2012.
3. Kreyszig, E., *Advanced Engineering Mathematics* (10th Ed.). John Wiley and Sons, 2011.