

## **6.5. Core Courses Level 400**

## **GTA401/6-Research Project**

The course introduces students to a research project in audiology. The students are trained to conduct research under the supervision of the faculty members. They are encouraged to select research topics that are important and innovative in the audiological field. The course requires the students to work independently and professionally while adhering to the ethical standards. Students will be assessed through research proposal paper, presentation, dissertation and viva.

### *List of text/reference books:*

1. Daniel W.W., *A Foundation for Analysis in the Health Sciences* (8<sup>th</sup> Ed.). John Wiley & Sons, 2008.
2. Norman G.R. & Streiner D.L., *Biostatistics: The Bare Essentials* (3<sup>rd</sup> Ed.). McGraw-Hill Medical, 2008.
3. Motulsky H., *Intuitive Biostatistics* (2<sup>nd</sup> Ed.). Oxford University Press, 2010.
4. Katz, J., Burkard, R., Hood, L. & Medwetsky, L., *Handbook of Clinical Audiology*. Philadelphia: Lippincott Williams & Wilkins, 2009.

## **GTA406/2-Noise and Hearing**

This course introduces students to fundamental aspects of noise, different types of noises, damage risk criteria, noise exposure guidelines internationally and locally, the best practice for industrial audiology including hearing assessments on noise induced hearing loss cases and hearing conservation programme. It also covers the specific effects of noise on the auditory and other systems. 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. Rawool, V. (Ed.), *Hearing Conservation: In Occupational, Recreational, Educational and Home Settings*. Thieme, 2011.
2. Le Prell C.G., Henderson D., Fay R.R. & Popper, A.N. (Eds.), *Noise-Induced Hearing Loss: Scientific Advances (Springer Handbook of Auditory Research)*. Springer, 2011.
3. Chasin, M., *Hearing Loss in Musicians*. Plural Publishing Inc., 2009.
4. Katz, J., Burkard, R., Hood, L. & Medwetsky, L., *Handbook of Clinical Audiology*. Philadelphia: Lippincott Williams & Wilkins, 2009.

## **GTA407/5-Audiology Clinic IV**

This course is a continuation from Audiology Clinic I, II and III courses. In this course, students are attached to Audiology Clinic of HUSM three days/week and are supervised by experienced audiologists for 14 weeks. Apart from conducting history taking and fundamental audiological tests as well as procedures related to hearing aids, students are also involved in performing advanced audiological tests such as electrophysiological tests, site of lesion tests and non-organic hearing loss tests. Students will also develop

skills in dealing with complex cases, such as difficult to test children, children with multi-disabilities and patients with non-organic hearing loss. This course is taught through clinical supervision and discussions. Students will be assessed through supervisor's evaluation (practical), report, presentation, log book, practical test (OSCE), practical test (clinical examination) and viva voce.

*List of text/reference books:*

1. Katz, J., Burkard, R., Hood, L., & Medwetsky, L., *Handbook of Clinical Audiology*. Philadelphia: Lippincott Williams & Wilkins, 2009.
2. Stach, B.A., *Clinical Audiology: An Introduction* (2<sup>nd</sup> Ed.). San Diego: Singular Publishing Group, Inc., 2010.
3. Roeser, R.J., Valente, M. & Hosford-Dunn, H., *Audiology: Diagnosis, Treatment, Practice Management Volumes I-III* (2<sup>nd</sup> Ed.). New York: Thieme Medical Publishers, 2008.
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, E., Sippola, C., Brodsky, A.L., & LISW, *The Communication Skills Workbook*. USA: Whole Person Associates, Inc., 2008.

### **GTA408/6-Audiology Clinical Placement**

This course introduces students to clinical audiology practice in selected hospitals in Malaysia. Students are attached to Audiology Clinic for five days clinic per week and supervised via experienced Audiologists for six weeks. This clinical training will cover the best practice for Audiology for both adult and pediatric cases including interviewing session for history taking, routine tests such as otoscopic examination, tympanometry, acoustic reflex, PTA (with and without masking), measurement of hearing aid function and explaining results as well as giving counselling to the patients. This course will be taught clinical supervision and discussions. Students will be assessed through supervisor's evaluation (practical), reports, presentation and log book.

*List of text/reference books:*

1. Katz, J., Burkard, R., Hood, L., & Medwetsky, L., *Handbook of Clinical Audiology*. Philadelphia: Lippincott Williams & Wilkins, 2009.
2. Stach, B.A., *Clinical Audiology: An Introduction* (2<sup>nd</sup> Ed.). San Diego: Singular Publishing Group, Inc., 2010.
3. Roeser, R.J., Valente, M. & Hosford-Dunn, H., *Audiology: Diagnosis, Treatment, Practice Management Volumes I-III* (2<sup>nd</sup> Ed.). New York: Thieme Medical Publishers, 2008.
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, E., Sippola, C., Brodsky, A.L. & LISW, *The Communication Skills Workbook*. USA: Whole Person Associates, Inc., 2008.

## **GTA409/2- Audiology Seminar**

This course introduces students to the seminar for promoting advanced audiological knowledge. It also covers evidence-based practice (EBP) including interest, stages of EBP and types of statistics to answer the question of work practices. This course will be taught through lectures and discussions. Students will be assessed through assignments, journal presentation, seminar presentations and final examination.

### *List of text/reference books:*

1. Wong, L. & Hickson, L., *Evidence Based Practice in Audiology: Evaluating Interventions for Children and Adults with Hearing Impairment*. San Diego: Plural Publishing Inc., 2012.
2. Rubin, A., *Statistics for Evidence-Based Practice and Evaluation (Research, Statistics, & Program Evaluation)* (3<sup>rd</sup> Ed.). Brooks Cole, 2012.
3. Rubin, A. & Bellamy, J., *Practitioner's Guide to Using Research for Evidence-Based Practice* (2<sup>nd</sup> Ed.). Wiley, 2012.
4. Haynes, W.O., & Johnson, C.E., *Understanding Research and Evidence-Based Practice in Communication Disorders: A Primer for Students and Practitioners*. Allyn & Bacon, 2008.
5. Jolles, R.L., *How to Run Seminars & Workshops: Presentation Skills for Consultants, Trainers and Teachers* (3<sup>rd</sup> Ed.). Wiley, 2005.

## **GTA410/2-Ethics and Professionalism in Audiology**

This course introduces the student to professionalism, ethics, best practice of audiology, codes of ethics, ethical decision making, beneficence and nonmaleficence, competency and public statements in audiology. This course will be taught through lectures, tutorials, discussions and case studies. Students will be assessed through assignments, presentations and final examination.

### *List of text/reference books:*

1. Irwin, D.L., Pannbacker, M., Powell, T.W., & Vekovius, G.T., *Ethics for Speech-Language Pathologists and Audiologists: An Illustrative Casebook*. Delmar Cengage Learning, 2006.
2. Lubinski, R. & Hudson, M. W., *Professional Issues in Speech-Language Pathology and Audiology* (4<sup>th</sup> Ed.). Delmar Cengage Learning, 2012.
3. Hosford-Dunn, H., Roeser, R. J. & Valente, M., *Audiology Practice Management*. USA: Thieme, 2007.
4. Roeser, R.J., Valente, M., & Hosford-Dunn, H., *Audiology Diagnosis*. New York: Thieme, 2007.
5. Katz, J., Medwetsky, L., Burkard, R. & Hood, L. (Eds.), *Handbook of Clinical Audiology*. USA: Lippincott Williams & Wilkins, 2009.

## **GTA411/5-Audiology Clinic V**

This course introduces students to clinical audiology practice. Students are attached to Audiology Clinic for two days clinic per week and supervised via experienced Audiologists for 14 weeks. This clinical training will cover the best practice of Audiology for both adult and pediatric cases including interviewing session for history taking, basic tests such as otoscopic examination, tympanometry, acoustic reflex, PTA (with and without masking), and explaining results to the clients. Students are also able to handle the procedures related to hearing aids, advanced audiological test (electrophysiology testing, site of lesion tests, tests of non-organic hearing loss, vestibular testing and tinnitus audiometry) and mapping of adult patients with cochlear implants and children as well as patients who are difficult to be tested. Students will be assessed through supervisor's evaluation (practical), report, presentation, log book, practical test (OSCE), practical test (clinical examination) and viva voce.

### *List of text/reference books:*

1. Katz, J., Burkard, R., Hood, L., & Medwetsky, L., *Handbook of Clinical Audiology*. Philadelphia: Lippincott Williams & Wilkins, 2009.
2. Stach, B.A., *Clinical Audiology, An Introduction* (2<sup>nd</sup> Ed.). San Diego: Singular Publishing Group, Inc., 2010.
3. Roeser, R.J., Valente, M., and Hosford-Dunn, H., *Audiology: Diagnosis, Treatment, Practice Management Volumes I-III* (2<sup>nd</sup> Ed.). New York: Thieme Medical Publishers, 2008.
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., Leutenber, E., Sippola, C., Brodsky, A.L. & LISW, *The Communication Skills Workbook*. USA: Whole Person Associates, Inc., 2008.

## **GTA412/2-Practice Management for Audiologist and Speech Pathologist**

This course introduces students to fundamental principles of practice management, essential issues in business administrations, basic managerial accounting, financial management of clinical practice, human resource and staff management as well as the infection control at workplace. It also covers the applications of information technology at workplace for Audiology and Speech Pathology practice. This course will be taught via lectures, tutorials and discussions. Students will be assessed through test, presentation and final examination.

### *List of text/reference books:*

1. Hosford-Dunn, H., Roeser, R.J., & Valente, M., *Audiology Practice Management*. USA: Thieme, 2007.
2. Madell, J.R., & Flexer, C. (Eds.), *Pediatric Audiology: Diagnosis, Technology, and Management*. Thieme, 2008.
3. Katz, J., Burkard, R., Hood, L., & Medwetsky, L., *Handbook of Clinical Audiology*. Philadelphia: Lippincott Williams & Wilkins, 2009.

## **GTB408/9-Biomedical Practicum**

This course exposes students to the best practice in clinical diagnostic laboratory services for sustainability of health and quality of life. Students are given opportunities to acquire knowledge and experience as well as to observe, perform, analyze and interpret the test results. Students are also trained to identify and solve problems in laboratory services; to implement quality control program; to do troubleshooting and to manage the diagnostic laboratory. The course is conducted via practical training and discussion. The students are evaluated through practical tests, assignments, presentation and logbook.

*List of text/reference books:*

Text books relevant to the field of clinical/industrial attachment chosen by the students including those journals in their respective fields of speciality.

## **GTB411/8-Research Project**

This course provides the opportunity for the students to carry out biomedicine related research project under the supervision of a lecturer. This course also exposes the students to the best practice in research as well as occupational health and safety during research project briefing. This course is conducted by supervision of research work in the lab, discussion and workshop. Students are evaluated through thesis, seminars and supervision.

*List of text/reference books:*

1. Minichiello, V., Sullivan, G., Greenwood, K. & Axford, R., *Handbook for Research Methods in Health Sciences*. Australia: Addison Wesley, Longman, 1999.
2. Montgomery, D.C., *Design and Analysis of Experiments* (5<sup>th</sup> Ed.). NY: John Wiley and Sons, 2000.
3. Zieger, M., *Essentials of Writing Biomedical Research Papers* (2<sup>nd</sup> Ed.). NY: McGraw-Hill Professionals, 1999.
4. Guidelines for the preparation of final year research project dissertation. School of Health Sciences, USM, 2015.
5. Any books/journals relevant to the fields or topics of research chosen by the students.

## **GTB412/10-Industrial Training**

This course prepares students to the actual working experience in a laboratory. Student is given the choice to choose between gaining experiences in a research laboratory or in a healthcare-based laboratory. In the research laboratory, student will be exposed to relevant practical skills in research. Student will be guided and supervised by the laboratory researcher in project to be determined by the supervisor. Student who chooses to perform his/her industrial training in clinical/industrial laboratory will get to experience the running, analysis and evaluation of various clinical or industrial tests. Student will also be exposed to various administrative, best practice, health and safety

procedures and management skills in the laboratory. The students are evaluated through final report.

*List of text/reference books:*

Relevant text books and peer-reviewed journals related to the field of interest.

### **GTD406/3-Outpatient Dietetic Practicum II**

This course is a continuation of Outpatient Dietetic Internship I which aims to develop students' self confidence in planning the diet and to handle diet counselling session under supervision. Students will be attached to specialist clinics including the pediatric, renal and surgical clinics.

*List of text/reference books:*

1. Thomas B. & Bishop, T., *Manual of Dietetic Practices, (The British Dietetic Association)*. Oxford: Blackwell Scientific, 2008.
2. Bauer K.D. & Sokolik, C.A., *Basic Nutrition Counseling Skill Development*. Wadsworth, 2002.
3. Mahan K. & Escott-Stump, S., *Krause's Food, Nutrition and Diet Therapy* (12<sup>th</sup> Ed.). Saunders Co., 2007.

### **GTD407/3-Dietetics Practicum in the Ward II**

This course is a continuation of Dietetic Practicum in the Ward I which aims to enhance students' dietetic skills in giving medical nutrition therapy to patients in hospital wards. Students will be attached to selected wards such as pediatric, general, surgical and medical wards under the supervision of respective dietitians. Students are required to give case presentations and case reports based on their case studies as a prerequisite of completion of this course.

*List of text/reference books:*

1. Mahan, L.K., Escott-Stump, S. & Raymond, J.L., *Krause's Food and the Nutrition Care Process* (13<sup>th</sup> Ed.). Saunders Co., 2011.
2. Nelms, M., Roth, S.L. & Lacey K., *Medical Nutrition Therapy A Case Study Approach* (3<sup>rd</sup> Ed.). Thomson Wadsworth, 2008.
3. Nix, S., *William's Basic Nutrition and Diet Therapy*. Canada: Mosby Elsevier, 2009.

### **GTD408/3-Dietetics Practicum in Special Unit II**

This course is a continuation of Dietetic Internship Special Unit I which aims to expand students' knowledge in giving appropriate medical nutrition therapy in specific fields such as pediatric, surgery, trauma, medical, renal, oncology, nutritional support and critical care. Intensive training will be provided by the respective dietitians. Students are

required to give case presentations and case reports based on their case studies as a prerequisite to the completion of this course.

*List of text/reference books:*

1. Werbach M.R., Jeffrey Moss J., *Textbook of Nutritional Medicine*. Third Line Press, 2000.
2. Mahan, L.K., Escott-Stump, S. & Raymond, J.L., *Krause's Food and the Nutrition Care Process* (13<sup>th</sup> Ed.). Saunders Co., 2011.
3. Nelms M., Long, S. & Lacey, K., *Medical Nutrition Therapy A Case Study Approach* (3<sup>rd</sup> Ed.). Thomson Wadsworth, 2008.

### **GTD410/6-Research Projects in Dietetics**

This course introduces students to the actual research project on nutrition and health related diseases. The students will be exposed on how to choose appropriate experimental design and research methodology and conduct the research project effectively based on learned knowledge in real. The course also exposes the students on data analysis using correct statistics and effective thesis and article writing. This course is conducted by supervision of research work in the lab, ward, clinic and community. Students are evaluated through thesis, article, presentations and supervision.

*List of text/reference books:*

1. Elaine R.M. & Linda V.H., *Research, Successful Approaches* (3<sup>rd</sup> Ed.), American Dietetic Association, 2007.
2. *International Dietetics & Nutrition Terminology (IDNT) Reference Manual* (4<sup>th</sup> Ed.). Academy of Nutrition and Dietetics, 2013.
3. Stephen P. & Shane, A.T., *Introduction to Research in the Health Sciences* (5<sup>th</sup> Ed.). Churchill Livingstone, Elsevier, 2008.

### **GTF400/3-Forensic Medicine**

This course introduces students to the various kinds of death and its signs, various chemical transformations taking place after death, postmortem study, pattern and types of injuries. It also covers theoretical and practical aspects of the victims dying of unknown causes, killing, suicide, blunt/sharp force injuries, firearm and explosive injuries, asphyxia, drowning, burns and electrical shocks. The course will be taught via lectures, tutorials, discussion and education visits to forensic medicine unit. Students will be assessed via assignment, test, reports and final examination.

*List of text/reference books:*

1. Walters B.L., *Handbook of Autopsy Practice*. Human Press, 2009.
2. Maio, V.J.M, Dimaio D. and Dimaio D.J., *Forensic Pathology* (2<sup>nd</sup> Ed.). CRC Press, 2001.
3. Bardale R., *Principles of Forensic Medicine and Toxicology*. Jaypee Brothers Medical Publication, 2011.



4. Payne-James J., Busuttill A. & Smock W., *Forensic Medicine: Clinical and Pathological Aspects*. Greenwich Medical Media, 2003.
5. Saukko P. & Knight B., *Knight's Forensic Pathology* (4<sup>th</sup> Ed.). Arnold, 2014.
6. Catanese C., *Color Atlas of Forensic Medicine and Pathology*. CRC Press, 2009.

#### **GTF402/4-Ballistics and Chemistry of Explosives**

This course introduces students to concepts of ballistics and knowledge for ballistic and explosive investigations. This course also introduces concepts of explosives and various types of firearms and explosives commonly used by terrorist and criminals. This course is conducted at Department of Chemistry in Petaling Jaya by experts in both disciplines; ballistics and explosives. The course will be taught via lectures, tutorial and practical. Students will be assessed through tests, practical reports and final examination.

*List of text/reference books:*

1. Di Maio V.J.M., *Gunshot Wounds: Practical Aspects of Fire Arms, Ballistics, and Forensic Techniques* (2<sup>nd</sup> Ed.). CRC Press, 2002.
2. Zukas J.A., William, P.W., *Explosive Effects and Applications*. Springer, 2002.
3. Pickett M., *Explosives Identification Guide*. Delmer Publishers, 1998.
4. Carlucci D.E. & Jacobson S.S., *Ballistics - Theory and Design of Guns and Ammunition* (2<sup>nd</sup> Ed.). CRC Press, 2013.
5. Warlow T., *Firearms, the Law, and Forensic Ballistics* (3<sup>rd</sup> Ed.). CRC Press, 2011.

#### **GTF407/8-Forensic Practicum**

This course introduces students to training on crime scene management and forensic examination by way of mock crime scenes and moot court. This course is conducted at the Forensic Laboratory, Royal Malaysia Police in Cheras, Kuala Lumpur by qualified police personnel assisted by the forensic experts from the Department of Chemistry in Petaling Jaya. The students will have practical training in fingerprints, ballistics, and clandestine laboratory and will be exposed to various chemical and instrumental methods of analysis. The students will also be taken to real crime scenes and will be taught the various procedures followed in the search and collection of evidence materials. This course also provides fundamental knowledge on the Malaysian Legal System and also the police administration in processing of evidence materials at the Department of Chemistry. This course provides detailed knowledge on the preparation of reports and presentation of evidence before courts of law. The course will be taught via lectures, tutorial, practical and discussion, Students will be assessed through tests, presentation, practical reports, seminar and final examination.

*List of text/reference books:*

1. St. Clair, J.J., *Crime Laboratory Management*, Academic Press, 2003.
2. James, S.H., Nordby, J.J. & Bell, S., *Forensic Science: An Introduction to Scientific and Investigative Techniques* (4<sup>th</sup> Ed.). CRC Press, 2014.
3. Christian, D.R., *Forensic Investigation of Clandestine Laboratories*. CRC Press, 2004.

4. Ramotowski, R.S., *Lee and Gaensslen's Advances in Fingerprint Technology* (3<sup>rd</sup> Ed.). CRC Press 2013
5. Horswell J., *Practice of Crime Scene Investigation*. Taylor & Francis, 2004.
6. Houck, M.H., *Mute Witnesses: Trace Evidence Analysis*. Academic Press, 2001.
7. Bevel T. & Gardner R.M., *Bloodstain Pattern Analysis with an Introduction to Crime Scene Reconstruction* (3<sup>rd</sup> Ed.). CRC Press, 2008.
8. Fisher, B.A.J. & Fisher, D.R., *Techniques of Crime Scene Investigation* (8<sup>th</sup> Ed.). CRC Press, 2012.
9. Sherman, H. & Petraco, N., *Illustrated Guide to Crime Scene Investigation*, CRC Press 2005.
10. Fish, J.T., Miller, L.S. & Braswell M.C., *Crime Scene Investigation* (2<sup>nd</sup> Ed.). Anderson, 2010.
11. Ogle Jr, R.R., *Crime Scene Investigation and Reconstruction* (3<sup>rd</sup> Ed.). Prentice Hall, 2011.

### **GTF408/2-Forensic Documents Examination**

This course introduces students to various techniques to examine sample of forensic documents. The course will be taught via lectures, practical sessions and discussion by document examination experts from the Department of Chemistry Malaysia. Students will be assessed through tests, assignments, laboratory reports and final examination.

*List of text/reference books:*

1. Ellen, D. *The Scientific Examination of Documents-Methods and Techniques* (2<sup>nd</sup> Ed.). Taylor and Francis, 1997.
2. Roy, A.H. & Headrick, A.M. *Handwriting Identification, Facts and Fundamentals*. CRC Press LLC, 1999.
3. Koppenhagen, K.M., *Forensic Document Examination: Principles and Practices*. Springer-Verlag, New York, 2007
4. Kelly, J.S. and Lindblom, B.J., *Scientific Examination of Questioned Documents*. Taylor & Francis, 2006.
5. Hober, H.I, & Headrick A.M., *Handwriting Identification, Facts and Fundamentals*. Taylor and Francis, 2006.

### **GTF409/2- Statistics for Forensic Science**

This course introduces to students the use of statistics for forensic data interpretation and common fallacies of prosecutors and defense lawyers as well as the transformation from conventional statistical analysis to the use of more complex statistical interpretation. It covers the key statistical techniques used to evaluate various types of forensic evidence. Real-life examples from the forensic science literature and forensic case-work are used to illustrate relevant statistical concepts and methods in areas such as vehicle paint survey data, glass fragment interpretation, DNA profiling and biochemical matching (e.g. blood stains). The course will be taught via lectures and discussions. Students will be assessed via test, assignments and final examination.

*List of text/reference books:*

1. Lucy, D., *Introductory Statistics for Forensic Scientists*. Chichester: John Wiley & Sons., 2006
2. Aitken C.G.G., *Statistics and the Evaluation of Evidence for Forensic Scientists*. Chichester: John Wiley & Sons, 2004
3. Haigh, J., *Taking Chances; Winning with Probability*. New York: Oxford University Press, 2003

### **GTF410/2- Forensic Digital Evidence**

This course introduces students the fundamental of digital forensics. It covers the recovery and handling of digital evidence, investigation approach, device and storage of digital information. Computer forensic analysis and validation as well as digital crimes will also be discussed. The course will be taught through lectures and discussions. Students will be assessed via test, assignments and final examination.

*List of text/reference books:*

1. Marshall, A.M., *Digital Forensics – Digital Evidence in Criminal Investigation*. Chichester. John Wiley & Sons, 2008.
2. Casey, E., *Handbook of Digital Forensics and Investigation*. Burlington: Academic Press, 2010.

### **GTF411/8- Research Projects**

The course introduces students to diverse research disciplines pertaining to forensic science. The students engage in supervised research under the guidance of a faculty member. They are encouraged to select research topics in criminalistics, biological and chemical sciences, criminal profiling, forensic psychology and other related interdisciplinary investigation. The course requires substantial independent work by students. The completion of the course will present the students the ability to better understand research methodologies. The course will also provide a strong science foundation and emphasize the scientific method and problem solving skills that will keep them in good stead, when they are employed in forensic laboratories. Students will be assessed through dissertation, seminar and assignments.

*List of text/reference books:*

1. *Guide to the Preparation of Dissertation for Undergraduate Research Project*. School of Health Sciences, USM, 2004.
2. Judith, B., *Doing Your Research Project: A Guide for First Time Researchers in Education, Health and Social Science* (5<sup>th</sup> Ed.). Open University Press, 2010.
3. Judith, B. & Stephen W., *Doing Your Research Project: A Guide for First-Time Researchers* (6<sup>th</sup> Ed.). Open University Press, 2014
4. Journals and other references based on areas of research.

### **GTJ405/5-Medical Nursing Practicum**

This course introduces student to medical nursing practicum. It covers holistic, safe and best nursing practice. This course exposes students to nursing management and health education to patient and family. It also encourages cultural diversity and multi-disciplinary approach. Students will be assessed through practical tests, log book and final examination.

#### *List of text/reference books:*

1. Berman, A., Synder, S., Koziar, B. & Erb, G., *Fundamentals of Nursing: Concepts, Process and Practice* (9<sup>th</sup> Ed.). New Jersey: Pearson, 2012.
2. LeMone, P. & Burke, K., *Medical-Surgical Nursing: Critical Thinking in Client Care* (4<sup>th</sup> Ed.). New Jersey; Pearson Prentice Hall, 2008.
3. Timby, B.K., & Smith, N., *Introductory Medical Surgical Nursing* (10<sup>th</sup> Ed.). Philadelphia: Lippincott Williams and Wilkins, 2010.
4. Smith, S.F., Duell, D.J., & Martin, B.C., *Clinical Nursing Skills: Basic to Advanced Skills* (8<sup>th</sup> Ed.). New Jersey: Pearson Edu., 2012.

### **GTJ406/4-Surgical Nursing Practicum**

This course introduces student to surgical nursing practicum. It covers holistic, safe and best peri-operative nursing practice. This course exposes students to nursing management and health education to patient and family. It also encourages cultural diversity and multi-disciplinary approach. Students will be assessed through practical tests, log book and final examination.

#### *List of text/reference books:*

1. Berman, A., Synder, S., Koziar, B. & Erb, G., *Fundamental of Nursing: Concepts, Process and Practice* (9<sup>th</sup> Ed.). New Jersey: Pearson, 2012.
2. LeMone, P. & Burke, K., *Medical-Surgical Nursing. Critical Thinking in Client Care*, (4<sup>th</sup> Ed.), New Jersey: Pearson Prentice Hall, 2008.
3. Timby, B.K., & Smith, N., *Introductory Medical Surgical Nursing* (10<sup>th</sup> Ed.). Philadelphia: Lippincott Williams and Wilkins, 2010.
4. Smith, S. F., Duell, D. J. & Martin, B. C., *Clinical Nursing Skills: Basic to Advanced Skills* (8<sup>th</sup> Ed.). New Jersey: Pearson Edu., 2012.

### **GTJ407/4-Critical Care and Community Nursing Practicum**

This course introduces student to critical care and management of patients at community setting. It incorporates best nursing practice, health promotion and community engagement. It also encourages cultural diversity and multi-disciplinary approach. Students will be assessed through log book, quiz, practical tests 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*, (7<sup>th</sup> Ed.). China: Lippincott Williams & Wilkins, 2010.
2. LeMone, P. & Burke, K.M., *Medical-Surgical Nursing: Critical Thinking in Client Care* (4<sup>th</sup> Ed.). New Jersey: Pearson Prentice Hall, 2008.
3. Urden, L.D., Stacy, K. M., & Lough, M.E., *Critical Care Nursing: Diagnosis and Management* (7<sup>th</sup> Ed.). St. Louis: Elsevier/Mosby, 2014.

### **GTJ408/4-Maternal, Child and Women Health Nursing Practicum**

This course introduces student to maternal, child and women health nursing management. It incorporates best nursing practice and health promotion. It also encourages cultural diversity and multi-disciplinary approach. Students will be assessed through practical tests, log book 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* (6<sup>th</sup> Ed.). Lippincott Williams & Wilkins Publishers, 2009.
2. Perry, S.E., Hockenberry, M.J., Lowdermil, D.L. & Wilson, D., *Maternal Child Nursing Care* (4<sup>th</sup> Ed.). Missouri: Mosby Elsevier, 2010.
3. Towle, M.A., *Maternal-Newborn Nursing Care*. New Jersey: Pearson Education, Inc., 2009.

### **GTJ409/3-Nursing Foundation Practicum III**

This course introduces student to practicum nursing foundation III. It covers the medical and surgical management of patients with endocrine, musculoskeletal, neurology, otorhinolaryngology, ophthalmology, dermatology, immunology, hematology and oncology problems. 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* (9<sup>th</sup> Ed.). New Jersey: Pearson, 2012.
2. deWit, S.C., & O'neill, P., *Fundamental Concepts and Skills for Nursing* (4<sup>th</sup> Ed.). St. Louis: Elsevier Saunders, 2014.
3. Potter, P.A., & Perry, A.G.P., *Fundamentals of Nursing* (7<sup>th</sup> Ed.). Singapore: Elsevier Mosby, 2011.
4. Smith, S.F., Duell, D.J., & Martin, B.C., *Clinical Nursing Skills: Basic to Advanced Skills* (8<sup>th</sup> Ed.). New Jersey: Pearson Edu., 2012.

## **GTJ410/6-Research Project**

This course introduces student to a nursing research project. It emphasises scientific and innovative process of conducting research. Findings would enable nursing knowledge transformation, dissemination of research evidence and networking. This course will be implemented via discussion and supervision. Students will be assessed through oral and written research project.

*List of text/reference books:*

1. Creswell, J.W., *Research design: Qualitative, Quantitative and Mixed Methods Approach* (3<sup>rd</sup> Ed.). Thousand Oaks, California: Sage Publication, 2008.
2. Creswell, J.W. *Research Design* (4<sup>th</sup> Ed.). Los Angeles, USA: SAGE Publication Ltd., 2014.
3. Holloway, I. & Wheeler, S., *Qualitative Research in Nursing & Healthcare*. UK: Wiley-Blackwell, 2010.
4. Polit, D.F. & Beck, C.T., *Nursing Research* (9<sup>th</sup> Ed.). China: Lippincott, 2012.

## **GTK402/8-Research Project**

This course aims to increase knowledge and research skills such as preparing research proposal, literature review, seeking ethical approval (human ethics), choose of research design and methods, data collection, data analysis then further sharing the research results through scientific writing and presentation. Aspects of sustainability via the components of energy, health, agriculture, climate change and disaster risk management, production and consumption, population and poverty, biodiversity and health and safety will be incorporated into their research projects. Students are assessed through presentation of research proposal, research progress, thesis writing and viva voce.

*List of text/reference books:*

1. *Akta Keselamatan Dan Kesihatan Pekerjaan 1994 (Akta 514) Dan Peraturan-Peraturan Dan Perintah-Perintah*. International Law Book Services (ILBS), 2009.
2. *Akta Kilang Dan Jentera 1967 (Pindaan - 1974) (Akta 139) Dan Peraturan-Peraturan Dan Perintah-Perintah*. International Law Book Services (ILBS), 2009.
3. *Akta Kualiti Alam Sekeliling 1974 (Akta 127) Dan Peraturan-Peraturan Dan Perintah-Perintah*. International Law Book Services (ILBS), 2009.
4. Daniel W.W., *Biostatistics, Student Solutions Manual: A Foundation For Analysis In The Health Sciences (Wiley Series In Probability And Statistics)*. John Wiley & Sons, Inc., 2009.
5. Gordis L., *Epidemiology*. W.B. Saunders Company, 2009.
6. Weimer W.B., *Notes On The Methodology Of Scientific Research*. John Wiley & Sons, 1979.

### **GTK404/3-Environmental Management**

This course describes the ISO 14001 environmental management system and the needs for such standard. The requirement and the methods to conduct Environmental Impact Assessment, Social Impact Assessment, modelling and integrated environmental management are also explained. Students are trained to prepare documentation and conducting internal audits. The concept of sustainable development and established as well as highlighting the current global environmental issues are also applied in teaching. This course is taught via lectures, tutorial and discussion. Students will be assessed through essays, presentation, tests and final examination.

#### *List of text/reference books:*

1. Dalal-Clayton B. & Sadler B., *Strategic Environmental Assessment – A Sourcebook And Reference Guide To International Experience*. Earthscan, London, 2005.
2. Friedman F.B., *Practical Guide to Environmental Management* (9<sup>th</sup> Ed.). Environmental Law Institute, 2003.
3. Miller G.T., *Environmental Science, Working With The Earth*. Thompson Learning Science, 2009.
4. Radojevic M. & Bashkin V., *Practical Environmental Analysis*, Royal Society of Chemistry, 2006.
5. Schoffman A. & Tordini A. M., *ISO 14001: A Practical Approach*. An American Chemical Society Publication, 2003.
6. Smith J.U. & Smith P., *Introduction to Environmental Modelling*. Oxford University Press, Oxford, 2007.
7. Smith R.D. & Maltby E., *Using The Ecosystem Approach To Implement The Convention On Biological Diversity - Key Issues And Case Studies. Ecosystem Management Series No. 2*. IUCN Publications Services Unit, Cambridge, 2003.

### **GTK406/12-Environmental and Occupational Health Practicum**

Through USM-industry collaboration, the students will be placed for 6 months in selected government or private organisation. Students will identify the actual situation of environmental problems and occupational safety and health issues at workplace. Students have the opportunity to practice the knowledge they have learned, improve their skills and prepare themselves to face the real situation in the workplace. In addition, students will also apply to the concept of sustainability and eco-friendly development in the workplace as well as gain knowledge, focused on the elements of the ecosystem and the preservation of the workplace. Students will be assessed based on log book, report and presentation.

#### *List of text/reference books:*

1. *Akta Keselamatan Dan Kesehatan Pekerjaan 1994 (Akta 514) Dan Peraturan-Peraturan Dan Perintah-Perintah*. International Law Book Services (ILBS). 2009.
2. *Akta Kualiti Alam Sekeliling 1974 (Akta 127) Dan Peraturan-Peraturan Dan Perintah-Perintah*. International Law Book Services (ILBS), 2009.

3. *Akta Kilang Dan Jentera 1967 (Pindaan - 1974) (Akta 139) Dan Peraturan-Peraturan Dan Perintah-Perintah*. International Law Book Services (ILBS), 2009.
4. *Akta Pengurusan Sisa Pepejal Dan Pembersihan Awam 2007 (Akta 672)*. PNMB, 2007.
5. *Akta Petroleum (Langkah-Langkah Keselamatan) 1984 (Akta 302)*. PNMB, 2005.

#### **GTK408/4- Occupational Safety and Health Management**

This course introduces occupational safety and health management system in Malaysia such as OHSAS 18001, ILO-OSH 2001 and MS 1722. This course is also covers methods to prepare related documentation, planning for training and promotion associated with health and safety at workplace and methods to conduct audit. This course is taught via lectures, tutorial, case study and discussion. Students will be assessed through assignments, presentation, quiz, tests and final examination.

*List of text/reference books:*

1. JKPP GP (BM) 04/2003. *Manual Kursus Sijil Pegawai Keselamatan Dan Kesihatan, Modul 1 - IV*. Institut Keselamatan dan Kesihatan Pekerjaan Negara, Malaysia, 2003.
2. Ismail B., *Pengaturan Sendiri Dalam Pengurusan Keselamatan Dan Kesihatan Pekerjaan*. McGraw Hill Education, 2002.
3. ILO-OSH. *Guidelines On Occupational Safety And Health Management Systems*, 2001.

#### **GTN405/3-Current Issues in Nutrition**

This course will introduce students to contemporary issues related to Malaysian, international nutrition intake, controversial issues such as ‘new form of conquering’ by the introduction of fast food, introduction of processed foods from other countries/continents and its impact on the global and Malaysian food intake quality. It also covers other topics include therapeutic and nutraceutical food consumption, fad diet, association of food with cancer disease and obesity. 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. Rolfes S.R., Pinna K. & Whitney E., *Understanding Normal and Clinical Nutrition* (9<sup>th</sup> Ed.). Belmont (CA): Thomson Wadsworth, 2011.
2. Wardlaw G. & Smith A., *Contemporary Nutrition: Issues and Insight With Foodworks*. New York: McGraw-Hill Science/Engineering/Maths, 2012.
3. Nestle M., & Pollan N., *Food Politics: How the Food Industry Influences Nutrition and Health* (10<sup>th</sup> Ed.). California: University of California Press, 2013.
4. Brownell K. & Horgen K.B., *Food Fight: The Inside Story of Food Industry, America’s Obesity Crisis, and What We Can Do About It*. New York: McGraw Hill, 2004.



5. Schlosser E., *Fast Food Nation: The Dark Side of the All-American Meal*. New York: Harper Collins, 2012.
6. De Graff J., Wann D. & Naylor T.H., *Affluenza: How Overconsumption is Killing Us And How To Fight Back*. New York: Berrett-Koehler Publisher, 2014.
7. Ziegler E.E. & Filer Jr, L.J. (Eds), *Present Knowledge in Nutrition* (7<sup>th</sup> Ed.). Washington DC: ILSI Press, 1996.
8. Mahan L.K. & Arlin M., *Krause's Food, Nutrition and Diet Therapy* (11<sup>th</sup> Ed.). Philadelphia: Elsevier Science, 2003.
9. Eastwood, M.A., *Principle of Human Nutrition*. London. Chapman and Hall. 1997.
10. Linder, M., *Nutritional Biochemistry and Metabolism* (2<sup>nd</sup> Ed.). Appleton and Lange 1992.
11. Stipanuk M.H. & Caudill M.A., *Biochemical, Physiological and Molecular Aspects of Human Nutrition* (3<sup>rd</sup> Ed.). New York: WB Saunders, 2012.
12. Mann J. & Truswell A.S., *Essentials of Human Nutrition* (4<sup>th</sup> Ed.). Oxford: Oxford Univ. Press, 2012.

### **GTN407/3-Nutrition and Dietetics Seminar**

This course will introduce students to current issues of recent advancements on nutritional sciences such as concepts and current development. It also covers application of nutritional sciences in healthy populations throughout the lifespan to prevent and alleviate diet- and lifestyle-related diseases. This course will be taught via group debate and discussion session. Students will be assessed through assignment, presentation and final examination.

*List of text/reference books:*

1. Contento I.R., *Nutrition Education: Linking Theory, Research and Practice* (2<sup>nd</sup> Ed.). Sudbury, MA: Jones & Bartlett. 2010.

### **GTN408/4-Food Service and Industry Practicum**

This course will stress on food service handling (in hospitals, institutions, industry and restaurants) and the relationship between quantitative food production with different menus, equipments, service staff, time of serving, kitchen sanitation, food preparation and quality assurance. The main focus is on the practical sessions at hospitals, institutions, industries and major restaurants. Lectures and briefing session will be given on the first week or before the commencement of internship. The students will undergo internship service for a period of six to eight weeks in chosen premises. During the attachments, the students are required to observe the utilization of equipments, services and food management under supervision of field supervisors.

*List of text/reference books:*

- 1 Byers B.A., Shanklin C.W. & Hoover L.A., *Food Service Manual for Healthcare Institutions* (4<sup>th</sup> Ed.). JB-AHA Publishers, 2004.
2. Knight J. B. & Korschevar L.H., *Quantity Food Production, Planning and Management*. New York: Van Nostrand Reinhold, 2006.

3. Gregoire M.B. & Spears M.C., *Food Service Organization: A Managerial and Systems Approach* (6<sup>th</sup> Ed.). Prentice Hall, 2006.

### **GTN409/12-Research Project in Nutrition**

This course introduces students to a research project in related fields in order to broaden their knowledge and skills in critical analysis. It also covers research to acquire skills in scientific aspects for the testing of hypotheses in health science topics. The course will be taught via discussion and practical work. The students will be assessed through these writing and presentation.

*List of text/reference books:*

1. Koh E.T. & Owen W.L., *Introduction to Nutrition and Health Research*. Boston: Kluwer Academic Publication, 2000.
2. Heppner P.P. & Heppner M.J., *Writing and Publishing Your Thesis, Dissertation, and Research: A Guide for Students in the Helping Professions*. Belmont: Thomson Brooks/Cole, 2004.

### **GTP402/6- Research Project**

The course introduces students to diverse interdisciplinary & collaborative research culture pertaining to speech-language pathology field. The students engage in supervised research under the guidance of a school member. They are encouraged to select research topics in normal language development, paediatric language disorders, speech sound disorders, acquired language disorders, fluency disorders, voice disorders, motor-speech disorders, hearing impairment, swallowing problems and also be involved in research collaboration and partnership in linguistics, psychology, medical, other habilitation specialization area and etc. The course requires substantial independent and integrative work by the students. The completion of the course will develop the students ability to better understand the methodologies to conduct a research study. It will also expose students to essential fundamental research basics, scientific techniques as well as innovative problem solving skills to prepare the students to work in a variety of settings in the future. Students will be assessed through dissertation, and viva voce.

*List of text/reference books:*

1. Irwin, D., Pannbacker, M., & Lass, N., *Clinical Research Methods in Speech-Language Pathology and Audiology*. San Diego: Plural Publishing, 2007.
2. Kuzma, J.W. & Bohnenblust, S.E., *Basic Statistics for the Health Sciences* (5<sup>th</sup> Ed.). Mountain View: Mayfield Pub., 2005.
3. Ruscello, D.M., *Tests and Measurements in Speech-Language Pathology*. Boston: Butterworth-Heinemann, 1999.
4. Silverman, F.H., *Research Design and Evaluation in Speech-Language Pathology and Audiology* (4<sup>th</sup> Ed.). Boston: Allyn & Bacon, 1998.

## **GTP403/6- Speech Pathology Clinic V**

This course trains students to fully conduct clinical session under supervision. The main caseloads in this course are voice disorders, acquired language disorders, motor-speech disorders and language based learning disability. The students are required to design the individualized assessment and intervention plans for their patients. They are required to administer and apply these plans in managing their patients. This course is taught through 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. Boone, D.R., McFarlane, S.C., Von Berg, S.L. & Zraick, R.I., *The Voice and Voice Therapy* (8<sup>th</sup> Ed.). Boston: Allyn and Bacon, 2009.
2. McHenry, W. & McHenry, J., *What Therapists Say and Why They Say It: Effective Therapeutic Responses and Techniques*. Boston: Allyn & Bacon, 2007.
3. Hedge, M.N., *A Coursebook on Aphasia and Other Neurogenic Language Disorder*. New York: Thomson Delmar Learning, 2006.
4. Paul, R. & Norbury, C., *Language Disorders from Infancy through Adolescence: Listening, Speaking, Reading, Writing, and Communicating* (4<sup>th</sup> Ed.). St. Louis: Mosby, 2011.

## **GTP406/6-Speech Pathology Clinic VI**

This course trains students to fully conduct clinical session under supervision. The main caseloads in this course are acquired language disorders, learning disability, fluency disorders and swallowing disorders. The students are required to design the individualised assessment and intervention plans for their patients. They are required to administer and apply these plans in managing their patients. This course is delivered through 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. Carrau, R.L., & Murry, T., *Comprehensive Management of Swallowing Disorders* (2<sup>nd</sup> Ed.). San Diego. Singular Publishing Group, 2006.
2. Arvedson, J.C. & Brodsky, L., *Pediatric Swallowing and Feeding: Assessment and Management* (2<sup>nd</sup> Ed.). San Diego: Singular Publishing Group, 2001.
3. Logemann, J., *Evaluation and Treatment of Swallowing Disorders* (2<sup>nd</sup> Ed.). Texas: Pro-ed, 1998.

## **GTP408/2– Fluency Disorders**

This course introduces students to fluency disorders including stuttering and cluttering. Interviewing and investigating processes are emphasised in this course as well as the assessment and mode of intervention. This course is taught via lectures and problem-

based learning. Students are assessed through assignment, quiz, presentation and final examination.

*List of text/reference books:*

1. Guitar, B. & McCauley, R. J., *Treatment of Stuttering: Established and Emerging Interventions*. Lippincott Williams & Wilkins. Philadelphia, 2010.
2. Lees, R. & Stark, C., *The Treatment of Stuttering in the Young School-Aged Child*. Philadelphia: Whurr. London, 2005.
3. Ramig, P.R. & Dodge, D.M., *The Child and Adolescent Stuttering Treatment and Activity Resource Guide*. New York: Thomson Delmar Learning, 2005.

### **GTP409/6- Speech Pathology Clinical Placement**

This course trains students to fully conduct clinical session in a different setting, under supervision of a selected supervisor from other institution. Students are required to fully manage mix of cases along with designing the individualized assessment and intervention plans for their patients. They are required to administer and apply these plans in managing their patients. This course is delivered through 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. Paul, R., *Introduction to Clinical Methods in Communication Disorders*. London: Paul H Brookes Pub. Co., 2002.
2. Goldstein, B., *Cultural and Linguistic Diversity Resource Guide for Speech-Language Pathologists*. New York: Thomson Delmar Learning, 2000.
3. Goldberg, S., *Clinical Skills for Speech-Language Pathologist*. London: Singular Publication Group, 1997.
4. Hedge, M. N., *Pocket Guide to Treatment in Speech-Language Pathology*. London: Singular Publishing Group, 1998.
5. Corbin-Lewis, K., Liss, J.M. & Sciortino, K., *Clinical Anatomy and Physiology of the Swallow Mechanics*. New York: Thomson Delmar learning, 2005.

### **GTP410/2- Ethics and Professionalism for Speech Pathology**

This course introduces students to the professional aspects of the speech-language pathologist. It also discusses the code of ethics/conducts that were set by the professional body and Allied Health Act. This course is taught via lecture, tutorial and small group discussion. Students are assessed through assignment, seminar and final examination

*List of text/reference books:*

1. Irwin D.L., Pannbacker, M., Powell, P.W. & Vekovius, G.T., *Ethics for Speech-Language Pathologist and Audiologist: An Illustrative Casebook*. New York: Thomson Delmar Learning, 2007.

2. Body, R. & McAllister, L., *Ethics in Speech and Language Therapy*. West Sussex: John Wiley & Sons Ltd. United Kingdom, 2009.
3. Corey, G., Corey, M.S. & Callanan, P., *Issues and Ethics in the Helping Profession*. New York: Cengage Learning, 2010.

### **GTS401/3-Fitness Testing and Exercise Prescription**

This course will discuss about the tests to determine fitness level. This course also introduces students about the method in providing exercise prescription for each health and fitness components. Integrate innovative technological-assisted programs (i.e. activity monitoring, applications) for movement and exercise that are targeted on improving sedentary behaviour, wellness and quality of life. This course will be taught via lecture and practical. Students will be assessed through test, practical, lab report and final examination.

#### *List of text/reference books:*

1. Gordon N.F., Pescatello L.S., Thompson W.R., *ACSM's Guidelines for Exercise Testing and Prescription* (8<sup>th</sup> Ed.). Philadelphia, PA: Lippincott Williams & Wilkins, 2010.
2. Kaminsky L.A., *ACSM's Health-Related Physical Fitness Assessment Manual* (3<sup>rd</sup> Ed.). Philadelphia, PA: Wolters Kluwer Health/Lippincott Williams & Wilkins Health, 2010.
3. Jonas S. and Phillips E.M., *ACSM's Exercise is Medicine: A Clinician's Guide to Exercise Prescription*, Philadelphia, PA: Wolters Kluwer Health/Lippincott Williams & Wilkins, 2009.
4. Nieman, D. C., *Exercise Testing & Prescription: A Health-Related Approach* (7<sup>th</sup> Ed.). New York, NY: McGraw-Hill, 2011.
5. Swain, D. P., *ACSM's Resource Manual for Guidelines for Exercise Testing and Prescription*. Philadelphia, PA: Wolters Kluwer Health/Lippincott Williams & Wilkins, 2014.

### **GTS407/3-Therapeutic Exercises**

This course introduces students to the causes, prevalence and incidence of diseases in the human population and the effects of physical activity on them. This course also covers the application of specific exercises for prevention and treatment of chronic diseases. This course will be taught via lectures, practical and discussion. Student will be assessed through tests, assignments, presentation and final examination.

#### *List of text/reference books:*

1. Durstine J.L., *ACSM's Exercise Management for Persons with Chronic Diseases and Disabilities* (3<sup>rd</sup> Ed.), Champaign, IL: Human Kinetics, 2009.
2. Myers J. and Nieman D.C., *ACSM's Resources for Clinical Exercise Physiology: Musculoskeletal, Neuromuscular, Neoplastic, Immunologic and Hematologic Conditions* (2<sup>nd</sup> Ed.). Philadelphia, PA: Wolters Kluwer Health/ Lippincott Williams & Wilkins Health, 2010.

3. Roitman J.L. and LaFontaine T., *The Exercise Professional's Guide to Optimizing Health: Strategies for Preventing and Reducing Chronic Disease*. Philadelphia, PA: Wolters Kluwer Health/ Lippincott Williams & Wilkins Health, 2012.

### **GTS409/10-Research Project**

The course introduces students to diverse research disciplines pertaining to exercise and sports science. The students engage in supervised research under the guidance of a faculty member. They are encouraged to select research topics in sport physiology, sport psychology, sport nutrition, sport biomechanic etc. The course requires substantial independent work by students. The completion of the course will ensure that the students are better able and have better understanding with regard to the research methodologies. The course will also provide a strong science foundation and emphasise the scientific methods and problem solving skills that will enable them to carry out independent empirical studies in the future. Students will be assessed through dissertations, seminars and assignments.

*List of text/reference books:*

1. Journals and other references based on areas of research.
2. Gratton C. & Jones I., *Research Methods for Sport Studies* (2<sup>nd</sup> Ed.).New York, NY: Routledge, 2010.
3. O'Donoghue P., *Research Methods for Sports Performance Analysis*. New York, NY: Routledge, 2010
4. Berg K.E. and Latin R.W., *Essentials of Research Methods in Health, Physical Education, Exercise Science, and Recreation* (3<sup>rd</sup> Ed.). Baltimore, MD: Lippincott Williams & Wilkins, 2008.
5. Neutens J.J. and Rubinson L., *Research Techniques for Health Sciences* (5<sup>th</sup> Ed.). Boston, MA: Pearson, 2014.
6. McNamee M.J., Olivier S. and Wainwright P., *Research Ethics in Exercise, Health and Sports Sciences*. New York, NY: Routledge, 2007.

### **GTS410/3-Contemporary Issues in Sports Science Practices**

This course introduces students to the updated issues pertaining to the study of sports and exercise science based on local and worldwide perspectives. It encompasses the theories, empirical evidences based on current practices, malpractices and developments occurring in the field of sports science. The course will be taught via lectures, discussions and practical sessions. Students will be assessed through presentations, reports, tests and final examination.

*List of text/reference books:*

1. Journal and other references based on current issues in sports and exercise science.
2. Collins M. , *Genetics and Sports*. Switzerland: Karger, 2009.
3. Bakere S.R., *Hot Topics in Sports and Athletics*. New York: Nova Science Publishers Inc., 2008.
4. Bahrke, M.S. and Yesalis, C.E (Eds), *Performance Enhancing Substance in Sports and Exercise*. Champaign, IL: Human Kinetics, 2002.

## **GTS411/6-Industrial Training**

This course is ran by short term training which involve the basic knowledge in health science that require the application of technology, psychomotor skill, informatics, critical and rationale thinking, communication skill, ethic, professionalism, management skill, entrepreneurship and involvement in social activity and community service.

*List of text/reference books:*

Journal and other references based on areas of research being chosen.

## **GTX407/3–Quality Assurance in Medical Radiation II**

This course provides fundamental practical training regarding routine quality assurance in radiotherapy and nuclear medicine modalities. Students will be trained under the supervision of clinical and technical personnel on quality assurance and calibration according to standard protocols. Teaching and learning activities will be delivered through practicals and group discussions. Students will be assessed on their attendance, commitments and laboratory reports.

*List of text/reference books:*

1. Sharp, P.F., Gemmell, H.G. & Murray, A.D., *Practical Nuclear Medicine* (3<sup>rd</sup> Ed.). Springer, 2005.
2. Symonds, P., Deehan, C. & Meredith C., *Walter and Miller's Textbook of Radiotherapy: Radiation Physics, Therapy and Oncology* (7<sup>th</sup> Ed.). Churchill Livingstone, 2012.
3. Khan F.M., *The Physics of Radiation Therapy* (4<sup>th</sup> Ed.). Lippincott Williams & Wilkins, 2010.

## **GTX408/3–Dose Calculations and Treatment Planning in Radiotherapy**

This course introduces methods of dose calculation manually for radiotherapy and the best practice on procedures and techniques for treatment planning including simulation. Students will be taught on using computer for generating dose distributions for patient cases. 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. Washington, C.M. & Leaver, D.T., *Principles and Practice of Radiation Therapy* (3<sup>rd</sup> Ed.). Mosby, 2010.
2. Jayaramans, S. & Lanzl, L.H., *Clinical Radiotherapy Physics* (2<sup>nd</sup> Ed.). Springer-Verlag, 2004.
3. Khan, F.M., *Treatment Planning in Radiation Oncology* (3<sup>rd</sup> Ed.). Lippincott Williams & Wilkins, 2012.

## **GTX410/4–Imaging Techniques II**

This course will be conducted with collaboration with Department Radiology under supervision of clinical instructors. This course provides an integrated practical and theoretical training regarding imaging techniques involving CT scan, MRI, DSA and radiotherapy imaging. Students will be trained clinically concerning on imaging procedure, patient management and radiation protection aspects. Teaching and learning activities will be delivered through practical and group discussions. Students will be assessed through practical assessments, assignments, presentation and log book.

### *List of text/reference books:*

1. Greathouse, J.S., *Radiographic Positioning and Procedures: A Comprehensive Approach*, Delmar Learning, 2006.
2. Bontrager, K.L. & Lampignano, J.P., *Radiographic Positioning and Related Anatomy* (8<sup>th</sup> Ed.). Elsevier Mosby, 2014.
3. Ballinger, P.W. and Frank, E.D., *Merrill's Atlas of Radiographic Positions and Radiological Procedures* (10<sup>th</sup> Ed.). Elsevier Mosby, 1999.

## **GTX411/4–Radiotherapy Techniques**

This course is designed as a clinical course so that the students will be able to learn the practical application of the fundamental knowledge from the theoretical course. Students will participate and develop their skill in the clinical radiotherapy environment which includes procedure in treatment simulation, treatment planning, dose calculation and treatment technique. Students are trained to be competence in using radiotherapy equipment and also anticipating as a team member in all aspects of the patient's management. Students will be assessed based on continuous practical evaluation, student technical competence recorded in the log book and practical examination.

### *List of text/reference books:*

1. Washington, C.M. & Leaver, D.T., *Principles and Practice of Radiation Therapy* (3<sup>rd</sup> Ed.). Mosby, 2010.
2. Khan, F.M., *The Physics of Radiation Therapy* (4<sup>th</sup> Ed.). William and Wilkins, 2010.
3. Symonds, P., Deehan, C. & Meredith C., *Walter and Miller's Textbook of Radiotherapy : Radiation Physics, Therapy and Oncology* (7<sup>th</sup> Ed.). Churchill Livingstone, 2012.

## **GTX412/3-Nuclear Medicine Imaging Techniques**

This course give students chances to go through training to handle nuclear medicine imaging procedures such as 2-dimensional imaging and SPECT (single photon emission computed tomography) in clinical environment. Students also will be trained in nuclear medicine regarding the best practice of imaging including preparation of radiopharmaceuticals and quality assurance in nuclear medicine. Students will be trained to work in a team at nuclear medicine unit and display good responsibilities and ethical



values throughout their training. The course will be conducted via training at nuclear medicine unit HUSM for the duration of 14 weeks. The students will be assessed through continuous assessment, log book, clinical test (OSPE) and presentation.

*List of text/reference books:*

1. Shackett, P., *Nuclear Medicine Technology: Procedures and Quick Reference* (2<sup>nd</sup> Ed.). Lippincott William and Wilkins, 2009.
2. Prekeges, J., *Nuclear Medicine Instrumentation* (2<sup>nd</sup> Ed.). Jones & Bartlett Learning, 2013.
3. Christian, P.E. & Waterstram-Rich, K.M., *Nuclear Medicine and PET/CT: Technology and Techniques* (7<sup>th</sup> Ed.). Mosby, 2011.

### **GTx414/3-Quality Assurance in Medical Radiation I**

This course provides students with theoretical and practical knowledge in the QA of equipments for diagnostic imaging like general radiography, fluoroscopy radiography and mammography imaging. Students will carry out QA tests based on recent standards and protocols to ensure that proper functioning of diagnostic equipment for a sustainable patient service. Students will be trained good leadership when doing practical in a group. This course will be conducted via lecture, practicum dan SCL. The students will be assessed through practical reports, test, quiz and final examination.

*List of text/reference books:*

1. Stevens, A.T., *Quality Management for Radiographic Imaging: A Guide for Technologists*. McGraw-Hill, 2001.
2. Bushberg, J.T., Seibert, J.A., Leidholdt, E.M. & Boone, J., *Essential Physics of Medical Imaging*, (3<sup>rd</sup> Ed.), Lippincott Williams & Wilkins, 2012.
3. Carlton, R.R. and Adler, A.M., *Principles of Radiographic Imaging: An Art and A Science* (5<sup>th</sup> Ed.), Thomson Delmar Learning, 2013.
4. Abdul Aziz S.A., *Handbook of Quality Control in Radiography* (1<sup>st</sup> Ed.). School of Health Sciences, USM, 2012.

### **GTx415/8-Research Project**

This course gives chances to students to perform research in health by choosing one particular topic whether in radiology, nuclear medicine, radiotherapy or radiation protection as the initial exposure to life-long research. At the same time, students can learn to write their research findings scientifically as a dissertation that need to be submitted by the end of semester 2 of year 4. In this course, students will be trained to manage their projects and plan the preparation of their dissertations. The students will be assessed through presentation and dissertation.

*List of text/reference books:*

Journals and other references based on areas of research being chosen.

## **GTX416/4–Professional Training**

This course gives students chances to see the applications of radiation in a working environment clearly includes diagnostic and therapeutic procedures, research and radiation protection in health and medicine. Students are able to see installation and commissioning of radiation equipments in hospitals or medical centers by suppliers. Students will be trained to present case study verbally and to manage case taking and report writing systematically. Students will go through 3 months training at government/private hospitals atau private companies. Students will be assessed through log book, report and presentation.

### *List of text/reference books:*

1. Cherry, S.R., Sorenson, J.A. & Phelps, M.E., *Physics in Nuclear Medicine* (4<sup>th</sup> Ed.). Elsevier, 2012.
2. Bushberg, J.T., Seibert, J.A., Leidholdt, E.M. and Boone, J.M., *Essential Physics of Medical Imaging* (3<sup>rd</sup> Ed.). Lippincott Williams & Wilkins, 2012.
3. Washington, C.M. and Leaver, D.T., *Principles and Practice of Radiation Therapy*, (3<sup>rd</sup> Ed.). Mosby, 2010.