ACADEMIC ASSOCIATE OF SCIENCE IN MAGNETIC RESONANCE IMAGING COURSES		
GENERAL EDUCATION COURSEWORK		
Algebra I	**ALG101**	This course introduces the student to the basic rudiments of algebraic theory including the following: linear algebra, associative algebra, logarithmic scale, scientific notation, solving for x. Practice exercises are provided throughout the course.
Anatomy and Physiology I	**AP101**	In this course, students will learn the chemical basis of life, cellular metabolism, and the different types of tissues that comprise the human body. The structure and function of the integumentary, skeletal, and muscular systems of the human body will be taught.
Anatomy and Physiology II	**AP102**	In this course, students will learn the structure and function of the nervous, endocrine, blood, cardiovascular, Immune and lymphatic systems of the human body. Electrical and chemical reactions, transport of substances, and defense mechanisms of the human body will be studied.
Anatomy and Physiology III	**AP103**	In this course, students will learn the structure and function of the digestive, respiratory, urinary, and reproductive systems of the human body. Nutrition and metabolism, water, electrolyte, and acid base balance will be discussed. Pregnancy, growth, and development will be studied. Students will also be introduced to the study of genetics and genomics.
Oral Communication	**OCOM101**	This course is designed to empower students to speak effectively in a public forum. Students will learn public speaking contexts, topic selection, audience analysis and ethical communication. Students will practice organizing and outlining ideas, constructing introductions and conclusions, and utilizing presentational aids. Students will deliver three speeches in this class; to include one demonstration speech, one informative speech, and one persuasive speech.
Written Communication	**WCOM101**	This course is designed to empower students to write effectively. Students will learn to choose topics and organize their ideas and materials. They will practice writing a first draft, editing and proof reading their work for errors. Additionally, students will undertake a research project following a systematic process.
TECHNICAL COURSEWORK		
Medical Terminology I	**MT101**	Students will be introduced to medical terminology and learn how to build and analyze medical terms using prefixes, suffixes, roots and combining vowels. Students will practice building and defining medical terms for anatomical structures and pathologies associated with the various body systems. Writing medical reports and communicating with medical staff using medical terms and abbreviations will be discussed and practiced.
MRI Cross Sectional Anatomy Lecture	**MXAN201**	This module comprises detailed discussions, demonstrations and presentations of different body

		systems from a cross-sectional point of view. It will present images in different contrasts and viewing planes, including but not limited to the Sagittal, Coronal and Transverse.
MRI Cross Sectional Anatomy Laboratory	**MXAN201L**	Under the supervision of the clinical/laboratory instructor, students will perform MRI studies based on the cross-sectional anatomy discussed in lectures, and instructors will help students with hands-on training to draw correlations between the didactic and practical sections of the anatomy module. All studies will be performed on students and volunteers.
MRI Fundamentals of Medical Imaging Patient Care	**FMIS101**	Students and participants in this course are assisted in transition from General Education (GE) toward technical and effective maturity that is required for starting their MR Physics, Cross Sectional Anatomy and Pathophysiology courses, through introducing students and applicants to medical imaging terminology, explaining fundamental concepts of clinical environment, defining role of the key clinical team members in healthcare and orientation toward major clinical policies. Also, students will master fundamental clinical skills, namely critical thinking, coping with stress, effective patient interaction, performing basic procedures including history taking, recording vital signs, safe patient transfer, immobilization, CPR, contrast injection, bloodborne pathogens control, handwashing and familiarizing students and applicants with basics of patient care in clinical settings for medical imaging procedures.
MRI Fundamentals of Medical Imaging Clinical Lab	**FMIS101L**	Students and participants in this course during Workshops and Clinical sessions will apply lessons learned in the didactic setting to simulated real world scenarios. Throughout Clinical Lab and interactive discussions, initially students will be given a comprehensive explanation of each scheduled topic including HIPAA, Sexual Harassment Prevention, OSHA, Professionalism, Handwashing techniques, Prevention of Bloodborne Pathogen Exposure Techniques, 12 (Twelve) Lead EKG placement and Tracing, Ultrasound instrumentation and applications. Toward the end of course, students will have their initial approach and exposure to MR scanning systems to understand MR instrumentation and safety and monitoring techniques. There will be an evaluation for each of the five (5) topics including HIPAA, OSHA, Sexual Harassment Prevention, EKG and MR Safety. Upon passing the required exam and relevant assessments and evaluations, students will receive related Certificates.
MRI Fundamentals of Medical Imaging Patient Ethics	**FMIS102**	Students and participants in this course will learn the ethical and legal implications involved with Medical Imaging. The focus is to develop the students' critical thinking and enable them to make the best decision for the patient when facing ethical and legal dilemmas in any clinical setting. Students will be taught to make such decisions within the boundaries of medicolegal,

		ethical principles, rules of professionalism, laws and regulations. By studying topics such as patient autonomy, informed consent, truthfulness, confidentiality, death and diversity, students and participants will learn to apply their own values, common senses and applicable health laws to make knowledge-based decisions about patient care. Throughout the course, students and participants will be presented information through textbooks, lectures with accompanying power point presentations, related videos and additional reading material. Students will be engaged in peer interactions on discussion boards and peer reviews, collaborative work in groups, in class writing exercises, homework assignments and chapter exams. The variety and diversity of activities will provide students and participants with a wide range of opportunities for learning and mastering ethical considerations in the Medical Imaging field. The main focus of the course is addressing code of ethics/professional behavior including: scope of practice, incident reporting mechanisms, standards for supervision in both direct and indirect supervision, professional communication with the patient, patient's family, friends and healthcare team. The role of the healthcare team members includes: technical, professional, patient's Bill of Rights and other integral parts of education during this course.
MRI Fundamentals of Medical Imaging Physics	**FMIS103**	This course will discuss the history of medical imaging, atomic structure, electromagnetic spectrum, power Spectrum, quantities and radiation, x-ray production, CT systems and their basics including equipment design, components and functional mechanisms. Basics of ultrasound imaging, including Doppler effect, will be explained in detail. Upon understanding the ultrasound basics and instrumentation, students will attend the FMIS Medical Imaging Ultrasound Clinical Lab to practice with U/S systems and learn how to operate them. Nuclear medicine basics and operational fundamentals will be explained toward the end of course. There will be an additional Clinical Lab session to address MR Safety Basics to familiarize students with safety concerns in and around the MRI facilities, as well as, to prepare students for the MR Clinical Lab module.
MRI Fundamentals of Medical Imaging Informatics	**FMIS104**	Students and participants will start the course with the history of medical imaging (1895). Improvements and achievements in the medical imaging field will then be explained and discussed, including the evolution of medical imaging from the start point of analog information on printed film images to where now medical imaging stands as digital and cloud-based imaging will be explored. The digital and interactive concepts of DICOM/PACS will be discussed and experimented by written and available interactive software and animations including but not limited to e-Film workstations. Besides conceptual areas of

		DICOM/PACS, Image quality, Send, Receive, Reformation and Parametric Analysis of images will be disclosed and practiced by students and applicants. The development of troubleshooting strategies and methodology will be an integral part of this course along with explaining and practicing different methods to resolve network conflicts, system issues and connectivity problems. Meanwhile preliminary mitigations and remedies will be discussed. To conclude the course, students and applicants will be familiarized with Artificial Intelligence (AI) and the impact of new technologies in Medical Imaging such as 3D structural printing and modeling of Medical Images.
MRI Fundamentals of Medical Imaging EKG, PMs, ICDs, CRTs and Monitoring Devices	**FMIS105**	Students and participants in this course, MRI Fundamentals of Medical Imaging EKG, PaceMakers (PMs), Implantable Cardiac Defibrillators (ICDs), Cardiac Resynchronization Therapies (CRTs) and Monitoring Devices will learn and gain related competency for decision-making skills and performing procedures. The history of EKG, starting in 1893 by Willem Einthoven European Dutch Physician, will be discussed followed by the basics of EKG and Arrhythmias. After completing the 12 (Twelve) Lead EKG and Arrhythmias basics, students and applicants will be prepared to attend FMIS MI EKG Clinical Lab to practice tracing heart electrical activities. After understanding and performing 12 (Twelve) Lead EKG placement and tracing, Monitoring devices and their safety in MRI environment will then be discussed. Monitoring strategies and patient strategies will be explained covering the management of certain group of patients who will need monitoring during MRI scan. Students will attend the FMIS MI Monitoring devices Clinical Lab at Clinical site. Toward the end of the course, PMs, ICDs, CRTs and their safety including MR Labeling of Cardiac Implantable devices will be explained. To conclude the course, students will have another Clinical Lab session to integrate EKG and MR scanning skills.
MRI Pathophysiology I	**MPATH101**	This course will help students understand the clinical pathophysiology of disease processes by discussing those most frequently diagnosed with medical imaging. It also provides the essential pathology knowledge needed to produce high quality images. It includes a general overview of anatomy and physiology and covers body system disorders and injuries. Lectures also focus on the optimal imaging modality namely, Radiography, Computed Tomography (CT), Ultrasound, Nuclear Medicine, Positron Emission Tomography (PET), as well as Magnetic Resonance Imaging (MRI), to see, diagnose, and treat various disorders.
MRI Pathophysiology II	**MPATH201**	This course is a continuation and expansion of Pathophysiology I. Lectures focus on disease processes in more systems of the body, and their visualization and diagnosis in the appropriate medical imaging modality, including Radiography, Computed Tomography (CT),

		Ultrasound, Nuclear Medicine, Positron Emission Tomography (PET), and Magnetic Resonance Imaging (MRI), is examined. Discussions also center on how each modality works together to play a vital role in the health care process.
MRI Physics, Safety, Bio-effects Lecture	**MPHY101**	Quantum mechanical concepts of MRI are discussed and demonstrated with animations and required software. Image quality, artifacts, tradeoffs, and parameter optimizations are discussed in detail. Safety concerns and bio-effects of magnetic fields, RF fields and gradient fields are discussed and proper screening of patients is emphasized. Pulse sequence selection and protocol designing as part of physics are reviewed and performed.
MRI Physics, Safety, Bio-effects Laboratory	**MPHY101L**	Students will utilize and practice effects of TR, TE, TI, FA on imaging techniques and will compare different settings with each other. All practices will be performed on actual MRI systems with students, volunteers and subjects.
EXTERNSHIP		
Externship I (MRI)	**EXTM201**	In clinical settings, students will learn and perform a wide variety of MRI studies under the supervision of a registered MRI technologist. Students will develop the skills necessary to effectively communicate with administrative staff members and departments, such as scheduling departments, admissions office, billing departments, medical records departments, and eventually the reading and reporting staff, such as Radiologists and Radiology Assistants. Students will WCUI School Catalog 45 practice taking patient interviews, screening, preparation, positioning, and scanning, along with table settings, parameter selection, sequence optimization, and protocol application.
Externship II (MRI)	**EXTM202**	Students will be able to start and complete full procedures, and toward the end of their externship, students will utilize their remaining hours to take part in different type of studies, such as abnormal cases, and will gain more experience in neuroimaging, body imaging, and MSK imaging. Upon the successful completion of their externship, students will be able to perform and complete all general MRI exams without assistance. They will also have gained experience in patient care, critical thinking, front desk procedures, and other soft skills throughout their clinical externship.