GRD COURSE STRUCTURE

I. General Education Requirements (GER)

GER Program Learning Outcomes:

After completing the FCHS General Education Requirements, students will be able to:

PLO 01. Critical Thinking - Define, analyze and solve problems.

PLO 02. Quantitative Reasoning - Explain information presented in various mathematical forms.

PLO 03. Quantitative Reasoning - Apply quantitative methods to solve problems and develop informed opinions.

PLO 04. Information and Technological Literacy - Access appropriate information from multiple sources

PLO 05. Information and Technological Literacy - Assess the information in order to respond and work in creative ways

PLO 06. Information and Technological Literacy - Use and evaluate technology effectively both ethically and securely.

PLO 07. Language Communication - Communicate effectively in English or Arabic in written and oral forms

PLO 08. Basic Sciences Competency - Explain introductory concepts and processes in the basic sciences.

PLO 09. Team Work - Work effectively in teams.

PLO 10. Cultural awareness - Understand, respect, and interact constructively with others of similar and diverse cultures, values, and perspectives.

GER Courses

Each student will select a minimum of one course from each category as indicated by the department in order to complete a minimum of 18 Credit Hours (cr).

1. **English**
   Academic Writing 1 – 2 cr

2. **Humanities**
   Foundations of Health – 3 cr
   Innovation and Entrepreneurship – 3 cr
   Fitness to Practice – 3 cr

3. **Natural Sciences**
   Biology – 3 cr + Biology lab – 1 cr
   Chemistry – 3 cr + Chemistry lab – 1 cr
   Physics – 3 cr + Physics lab – 1 cr

4. **IT or Mathematics**
   Mathematics – 3 cr
   Introduction to Research & Biostatistics – 3 cr

5. **Social or Behavioral Sciences**
   Introduction to Psychology – 3 cr

6. **Islamic, History, or Culture**
   Islamic Studies – in Arabic - 3 cr

GER Course Description

GRD 101 – Biology

This course introduces the basic concepts of molecular and cellular biology, biochemistry, and genetics. The course will begin with an overview of the molecules of life such as carbohydrates, proteins, lipids, and nucleic acids, followed by cellular structure and function with an emphasis on genetic control and basic biochemistry. The idea of the genes will be introduced in addition to some modern genetic terminologies, as well as patterns of inheritance. Some molecular genetics techniques will be discussed along with their importance in genetic diseases. Moreover, topics on epigenetics will be discussed along with an introduction on stem cells.

GRD102 – Biology Lab

The Biology Lab course consists of practical aspects of biology. The lab will cover several topics such as understanding microscopes, structure and function of organic compounds such as carbohydrates and proteins, types of cells (prokaryotes and eukaryotes), cellular transport via osmosis, mitosis on onion root tip, ABO blood grouping, DNA extraction, gel electrophoresis and Gram staining technique. On completing the biology lab course, students would have developed lab skills such as teamwork; safe handling of chemicals, reagents and equipment; academic lab report writing; time management; problem solving; and critical analysis of results. The skills and knowledge gained will be assessed on weekly basis through lab report submission and paper-based final examination.

GRD133 - Foundations of Health

This course is designed to equip students with basic knowledge related to medical terminology, patient assessment, infection control and safety measures of healthcare workers, as well as the basic ethical principles that guide the health practice. The course also focuses on health education and promotion skills, with emphasis on the new technologies for the prevention of diseases (vaccinations, screening, diagnostic tests, and new concepts in genetic engineering and biotechnology). Students will have the opportunity to learn about contemporary health issues and critical issues in global health including women's health, environmental health, the nutritional crisis to come, and violence.

GRD 141 – Chemistry

This course covers fundamental knowledge of chemistry. It covers chemistry at an introductory level but with

sufficient depth of understanding to facilitate a smooth transition to chemistry components in future studies.

GRD 142 – Chemistry Lab

This course consists of experimental works in chemistry as well as tutorial papers. This work enables the development of manipulative skills and the ability to assess observations, as well as providing first-hand experience of topics taught in GRD141–Chemistry.

GRD 144 – Physics

This course is designed to provide a basic understanding of physics for students wishing to continue their studies in the allied health fields. The course delivers important applications that will serve FCHS graduates well when they embark on their careers after graduation. The material includes an introduction to physics and measurement units; atomic and nuclear structure; velocity, Newton's laws of motion and torque with applications to bio-mechanical motions as muscle tensions, joint distortions; work and energy; waves and sound; material properties; heat thermal properties, Bernoulli's Principle and energetics of blood flowing dynamics, blood viscosity electricity and electric fields; DC and AC currents and voltages; magnetism; light, optics and human vision. The treatment is necessarily introductory.

GRD 145 – Physics-Lab

GRD 145 is a co-requisite course to GRD 144, providing the practical laboratory component to an introduction to the principles of physics. GRD 144 - Physics is designed to provide a basic understanding of physics for those students wishing to continue their studies in radiography and physiotherapy. The material in GRD 145 includes 12 laboratory sessions that include: an introduction to physics and measurement units; mechanics and Newton's laws of motion; work and energy; waves and sound; material properties, heat thermal properties, electricity and electric fields; DC and AC currents and voltages; magnetism; light, optics and human vision.

GRD 151 – Calculus for Health Sciences

This course focuses on basic mathematical concepts and discusses the following subjects: review of linear, quadratic, power, polynomial, algebraic, rational, trigonometric, exponential, hyperbolic, and logarithmic functions; limits and continuity; and differential and integral calculus with applications to the biological sciences. Examples, exercises and applications will be used to emphasize problems in health sciences.

GRD 251 – Introduction to Research and Biostatistics

This course aims to introduce students to research and statistical methods used in health sciences. It covers elementary topics such as basic concepts of quantitative and qualitative techniques, research design and data collection, probability, and correlation. These topics enable students to identify and use the appropriate statistical techniques in advanced research settings with emphasis on applications to medical problems.

GRD161 – Academic Writing 1

Academic Writing 1 is designed to provide students with the basic academic skills required to perform successfully in degree courses taught in English. Students will be introduced to basic

writing skills including note taking, information literacy and paraphrasing. . Furthermore, students are taught to quote sources to avoid plagiarism by using the APA citation style. In addition, students will do a fair amount of reading for writing, and will be taught how to orally present their research findings. The primary goal of this course is to help the students become more effective writers who are capable of recognizing the challenges and opportunities of writing in different situations for different readers.

GRD 171 – Introduction to Psychology

This course aims to provide a basic understanding of the psychology of human behavior and explain different subjects such as learning, development, cognition, and psychological disorders. The course enhances student's knowledge and understanding of how people think, act, and provide insight into the student's own personality and reactions, so they will be able to deal with stress and problems. The course is delivered with theory and some practical activities to ensure that students know how to apply their acquired knowledge.

GRD 271 – Islamic Studies

الثقافة الإسلامية علمٌ يهتم بمعرفة مقوّمات الدين الإسلامي ونظمه، والتحديات المعاصرة له. ومساق الثقافة الإسلامية محاضرات عامة في نظم الإسلام الكلية والقضايا المتعلقة بحضارته، كما يعالج قضايا فكرية هامة في العقيدة والشريعة والعبادات والأخلاق، ويركز بصفة أساسية على مظاهر الحضارة الإسلامية ومعطياتها، وما أسهمت به من معارف وعلوم كان لها الأثر الواضح في نهضة البشرية وتقدّمها. ولا يغفل مساق الثقافة الإسلامية عن أن يسلط الضوء على المشكلات والتحديات التي تواجه الإنسانية بشكل عام، والمجتمعات والشعوب العربية والإسلامية بشكل خاص، وعلى الكيفية التي بها نواكب العصر ونتعايش معه ونتواصل مع ثقافة الآخرين ومعارفهم، وذلك من خلال إيجاد حَكَمٍ منطقي يدلنا على أن نأخذ ما صفا وأن ندع ما كدر.

GRD 301 – Innovation & Entrepreneurship

Recent advances in medical research, basic sciences, agricultural and nutritional sciences, information technology, communication and transportation have created a wealth of new information that can be used to improve human health outcomes. The challenge for society now is to learn how to use all this information and propose solutions to improve human health. Many changes and improvements come from creativity, innovation and entrepreneurship. Through real world examples and research from experts in the field, students will learn how to incorporate design thinking, entrepreneurship, and growth and leadership into the UAE health system as well as their own personal and professional development.

This course is designed to provide students with essential skills needed to be competitive in today's growing economy. It will challenge students to innovate, overcome obstacles, and grow rapidly; with the goal of recognizing opportunities to improve health care; and creating a business that will provide innovative solutions that can have a positive impact on the health of the UAE population and the Gulf region. Overall, this course will look into the processes of innovation from discovery to delivery, and identify suitable pathways in order to bring students' ideas to fruition.

II. College Core Requirements (CCR)

CCR Program Learning Outcomes

After completing the FCHS College Core Requirements (CCR), students will be able to;

PLO 01. Strong Health Science Core - Define and explain human structure and function

PLO 02. Strong Health Science Core - Evaluate how human health is affected by: inherited factors and environmental factors including nutrition and lifestyle choices

PLO 03. Personal/Professional Development - demonstrate high standards in their professional life through a commitment to life-long learning.

PLO 04. Research skills - Analyze data

PLO 05. Research skills - Apply new ideas and methods to design and develop an innovative research project in an area of particular interest in health care

PLO 06. Ethics - use ethics in social/professional/work environment

PLO 07. Teamwork - Work effectively in a team to build and execute a project

PLO 08. Entrepreneurship - design creative strategies for pursuing, exploiting and further developing new opportunities in healthcare.

CCR Courses

It is mandatory for all students to enroll in the courses mentioned below in order to complete 16 Credit Hours.

1. Academic Writing 2 – 2 credit hours
2. Research Methodology – 3 credit hours
3. Research Project – 3 credit hours
4. Anatomy & Physiology A + Lab – 3+1 credit hours
5. Anatomy & Physiology B + Lab – 3+1 credit hours
6. First Year Seminar – 0 cr (Pass/ Fail)

CCR Course Description

GRD 100 – First Year Seminar

Advising involves both the development and communication of accurate information regarding degree programs, courses, resources, college policies and career opportunities intended to help students attain their educational goals. Academic advising, effectively delivered, can be a powerful influence on students' development and learning, and as such, can be a potent retention force on campus (Crockett, 1996). FCHS First Year Seminar will provide guidance for students, influence their development, promote retention, build relationships within the college and identify services that can guide students to clarify both their career and life goals. The seminar

series is centered on instructional services that go beyond academic interests, promote a caring attitude and help students adjust to college life.

GRD 111 – Anatomy & Physiology A

Anatomy and Physiology A is the first of a two-course sequence. In this course, a system-based approach is used to study the structure and function of the human body including tissues and organs. Emphasis is on understanding the mechanism for maintaining homeostasis and the use of anatomical terminology. Structural and functional concepts are enforced for each organ and organ system. Topics include the study of tissues, the integumentary system, the musculoskeletal system, the nervous system and the endocrine system. Students are expected to utilize their reading to extend their depth of understanding, participate effectively in class, practice problem solving and critical analysis.

GRD 112 – Anatomy & Physiology A Lab

The Anatomy and Physiology A - Lab is the first of two lab courses. It consists of practical components of anatomy and physiology. The structure and function of the cells, tissues, organs and systems of the human body will be studied by laboratory experiments, inspection of human models, the Anatomage table, animal organ dissections and observation of histological slides.

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GRD121 – Anatomy & Physiology B

Anatomy and Physiology B is the second of the two-course sequence. The course is a continuation of the knowledge gained in Anatomy and Physiology A. A system-based approach is used to study the structure and explore the function of the human body including the body organ and organ systems. Topics include the study of the cardiovascular system, blood, lymphatic system, immune system, respiratory system, digestive system, urinary system and electrolyte and fluid balance and pH, and finally male and female reproductive systems with a look through the embryonic development. Emphasis is placed on the integration of systems as they relate to normal health. Again, students will be expected to utilize their reading to extend their depth of understanding, communicate effectively, do problem solving and make critical analysis.

GRD 122 – Anatomy and Physiology B Lab

The Anatomy and Physiology B Lab is the second of two lab courses. It consists of practical components of anatomy and physiology. The cardiovascular, lymphatic, immune, respiratory, digestive, urinary, male and female reproductive systems and electrolyte and fluid balance of the human body will be examined by laboratory experiments, inspection of human models, the Anatomage table, animal organ dissections and observation of histological slides.

GRD261 – Academic Writing 2

Academic Writing 2 builds on GRD161 and will continue to develop reading academic texts, writing academic essays, using academic conventions and language appropriately, and demonstrating information literacy skills. In addition, students will develop the

skills of quoting, summarizing and paraphrasing when reviewing and evaluating research literature. Finally, students will gain valuable 21st century literacies related to the language of persuasion, oral communication and the use of basic technological tools.

GRD361 – Research Methodology

This course will provide an opportunity for health sciences students to establish or advance their understanding of research terminology in the health sciences. The course adopts an inquiry-based approach to make explicit the language conventions and ethics related to the health sciences field. Therefore, the course introduces the language of research, ethical principles and challenges within quantitative, qualitative, and mixed methods approaches. Students will use these theoretical terminologies to critically review health science related literature and will determine how research findings are useful in forming their understanding of the global, local, social and work contexts.

III. College Elective Requirements (CER)

Students will select one course from another discipline to complete a minimum of 3-6 credits as mandated by their program. Students will choose from a variety of College Elective Courses offered by all programs at FCHS. Here are some sample courses offered by the GRD.

1. Astronomy – 3 credit hours
2. Science and Technology – 3 credit hours
3. Health Informatics – 3 credit hours
4. Health and Nutrition – 3 credit hours

CER Course Description

GRD560 – Astronomy

This course is designed to emphasize the important fundamental concepts in astronomy. It offers mainly an overview of the structure, formation, and evolution of planets, stars, galaxies, and the universe. The students will learn about the solar system which contains the Sun, the planets Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus, Neptune, and Pluto. With over 400 billion stars burning steadily, students will get to know that we are in the Milky Way, which is just a typical galaxy in one of the universes in the space. Moreover, students will be updated on the dark matter mainly composed of dark energy that is causing the universe to expand and to accelerate. In this elective course, students will have hands on large-scale

systems from the astrophysics field. For example, they will be able to work with big standard scientific notations and estimate relative scales.

GRD570 – Science and Technology Evolution

This course will be useful for healthcare students, as it will provide them with basic knowledge about how science and technology have evolved over time. Scientists' accomplishments will be presented to students with a focus on the importance of their discoveries and its impact on civilization especially in the health sector. Additionally, the course will highlight the contribution of Arab and Muslim scientists especially in the health field, which provided the foundation for current health knowledge.

GRD550 – Health and Nutrition

This course will introduce students to the essentials of human nutrition and its relationship with health. Students will learn about the different nutrients important for health, and dietary guidelines that promote good health. Finally, the course draws on global health promotion that will enable students to apply the underpinning of a healthy and active lifestyle within a Middle East context.

GRD540 – Health Informatics

This course aims to introduce first-year students to basic information on health informatics concepts: the study of how health data are collected, stored, processed, and used to support the process of health care delivery. The course offers an overview of the field of health informatics by providing students with the fundamental knowledge of the concepts of health informatics and how technology is used in the delivery of effective health care. Students will also gain an understanding of the challenges encountered in this field.

IV. Major Core Requirements (MCR)

Students from the Nursing department are offered the below mentioned courses from GRD. These are 3 credit courses offered to the first-year students in the second semester. The courses are:

1. Applied Biochemistry – 3 cr
2. Microbiology – 3 cr

MCR Course Description

GRD221 - Applied Biochemistry

The course is designed to introduce the students to biochemistry by building on a basic understanding of chemistry. It describes and distinguishes the major classes of biological macromolecules in terms of structure and function. It will discuss the role of enzymes in metabolism including their mechanisms of action and regulation, the roles played by vitamins and minerals as coenzymes and cofactors in influencing enzyme action. It will describe the major metabolic pathways of biological macromolecules. The main concepts of molecular biology and the use of recent molecular technologies in clinics such as epigenomics, genetic engineering and the Human Genome Project will be discussed.

GRD211 – Microbiology

This course introduces students to basic microbiology and immunology with a focus on biomedical aspects and human health appropriate for students in fields of allied health such as nursing, pharmacy, etc. Topics covered include an introduction to the classification, morphology and physiology of microorganisms, primarily organisms that can cause human pathology, such as bacteria, viruses, fungi, protozoans, parasites, and worms; the body's immune response and mechanisms of defense at the cellular and humoral (molecular) level will also be covered in the context of pathogenic organisms, tissue transplants, and autoimmune disease.