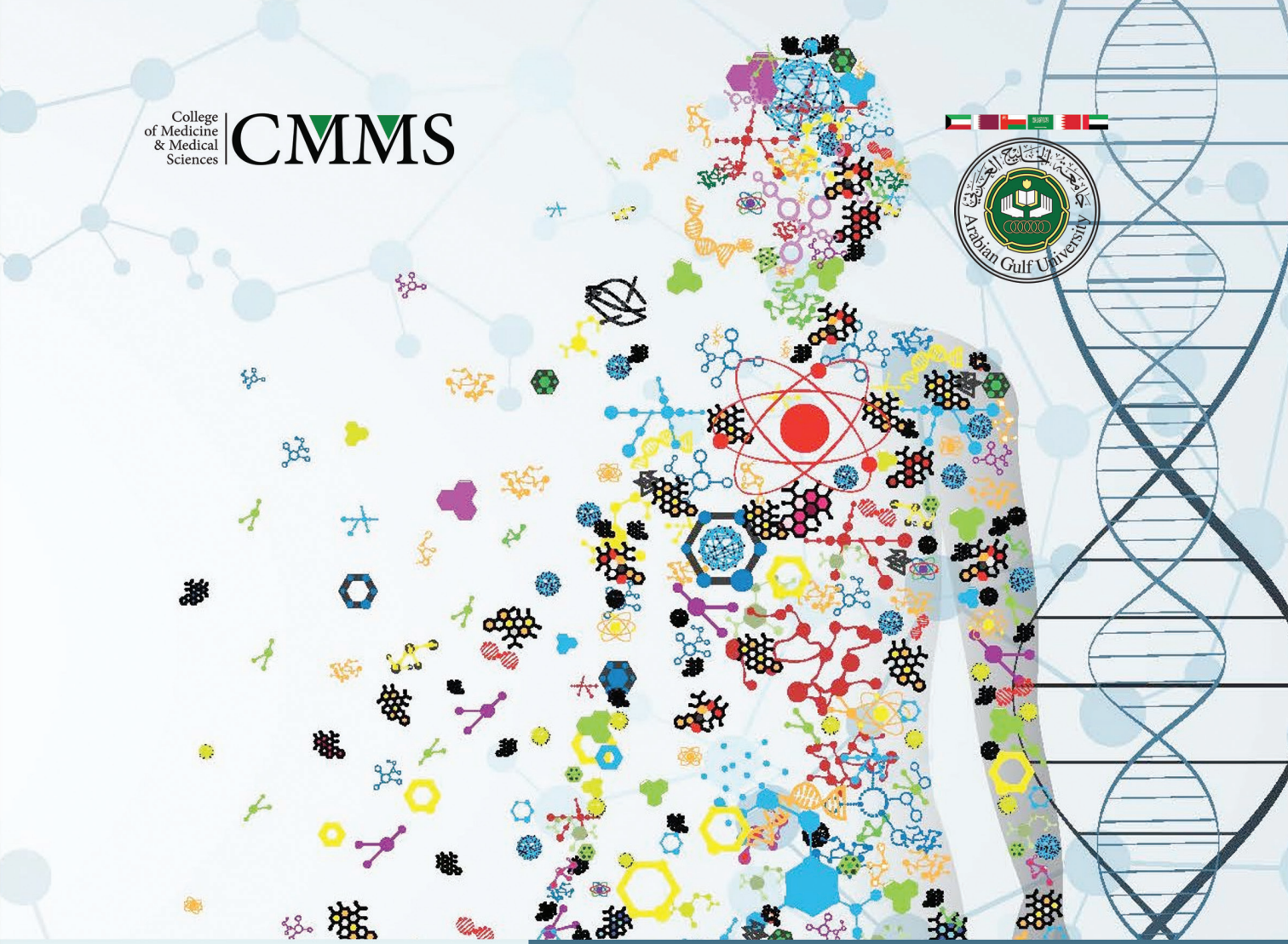
College of Medicine & Medical Sciences | CMMS

Arabian Gulf University



Master of Science in Personalized Medicine

Program Overview

Personalized Medicine can be defined as products and services that leverage the science of genomics and proteomics directly or indirectly and capitalizes on the trends toward wellness and consumerism to enable tailored approaches to prevention and care for an individual or a society.

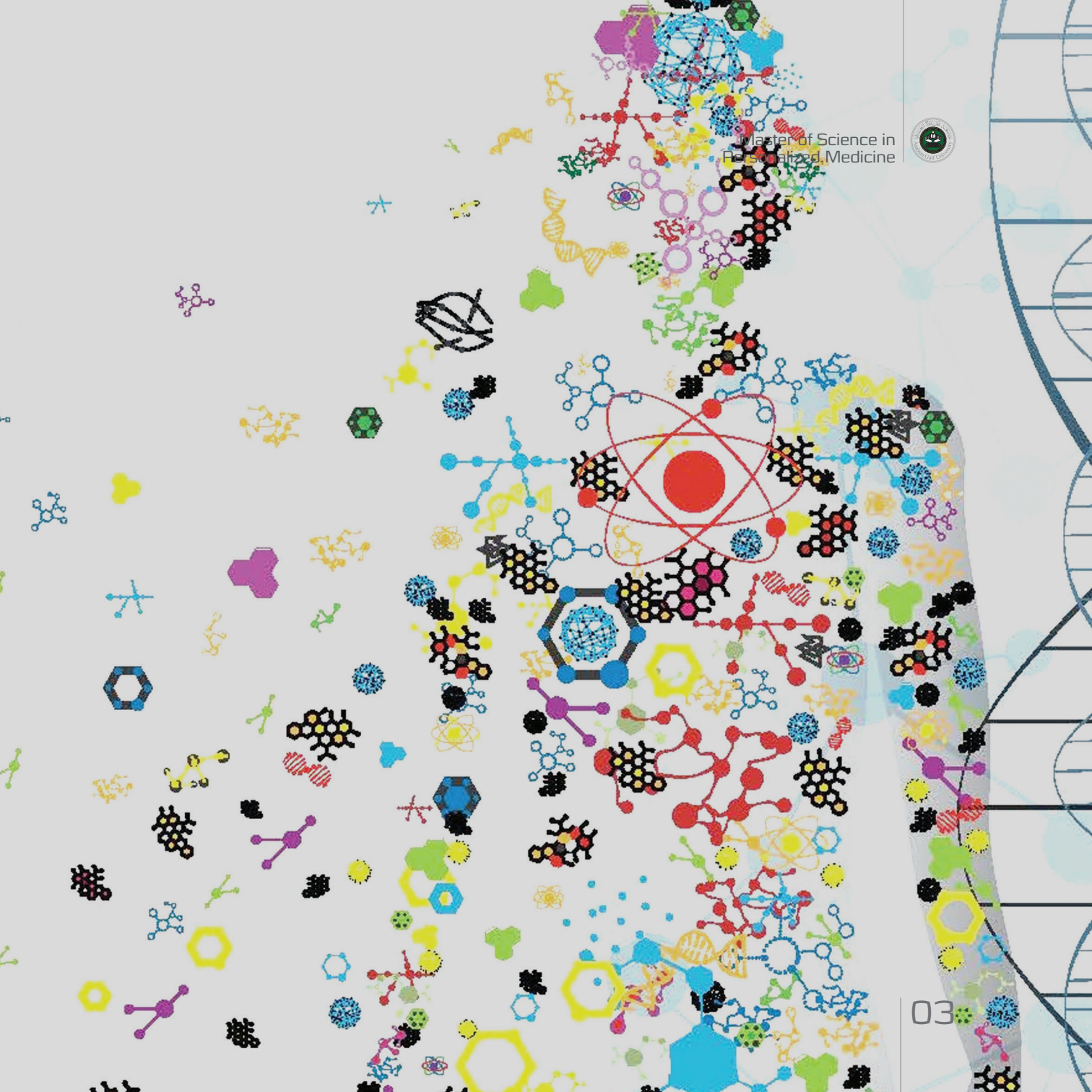
Establishment of the human genome and advances in proteomics has led to a rapidly advancing field of healthcare that is informed by each person's unique clinical, genetic, genomic makeup, and environmental information. These help scientists and physicians to develop targeted diagnostics and therapeutic approaches to achieve more personalized management by identifying individual's susceptibility to diseases and response to particular treatments. The program focuses on complex diseases with multigene components influenced by environmental factors that interact with the human genome such as cancer, heart disease, neurologic and neuropsychiatric disorders, obesity and diabetes. Such diseases represent an enormous burden in the countries of the Gulf Cooperation Council (GCC) countries.

Vision

To be a unique, innovative and effective educational and research program serving the health needs of the GCC citizens, and contributing globally to excellence in research and development, clinical services and health education.

Mission

To acquire familiarity with genetic and genomic testing and gain theoretical and practical knowledge of personalized medicine and its role in making the treatment individualized to the disease and patient.



Program Objectives

- To build the competence and capability of health professionals in managing patients in a personalized context.
- To apply recent advances in knowledge and technology in the various areas of Personalized Medicine.
- To develop research capability towards advancing the field of Personalized Medicine.

Learning Outcomes

By the end of this program, graduates should be able to:

- Design or apply an effective individualized tailored therapy.
- Personalize healthcare and improve patient outcomes through:
  - Carrying out more precise diagnostics.
  - Eliminating unnecessary treatments and minimize side effects.
  - Achieve cost effective healthcare.
- Conduct clinical research.

Program Outline

The Master of Science Program

The Master of Science Program is a Two-Year Program organized as follows:

The curriculum is organized in 2 semesters, each of 16 weeks duration spread over the first academic year. The first semester consists of core courses, while the second semester is devoted to specific courses. The student is required to take all courses of the first semesters and optional courses in the second semester. At the end of the second semester, students must achieve a GPA of 3.0 or higher to proceed to the thesis.

The third and fourth semesters in the second academic year are dedicated to research and writing of thesis. The student is required to submit a thesis and defend it in front of an examining committee. Topics for the thesis will be decided in consultation with the thesis Supervisor, taking into consideration the students' interests and ongoing research activities. Thesis work can be partly performed by the student in his/her institution provided that a qualified supervisor is identified and technical facilities are available to carry out the planned experiments. Internal and external examiners evaluate the written dissertation and examine the student orally. The Master of Science degree requirements include 28 credit hours of courses and a thesis of 8 credit hours to be completed within two academic years (total 36 credit hours).

The Diploma Program

The Diploma Program is a one-year Program, organized as follows:

The curriculum is organized in 2 semesters, each of 16 weeks duration spread over the first academic year. After completion of courses, the student prepares a diploma project. The program is implemented by the Program Director and decisions are made by an Academic Committee consisting of members representing the major specialties in the program.

Outline of Courses

The students study 36 credit hours inclusive of a Master thesis, which is equivalent to 8 credit hours. The courses cover 28 credit hours as in the list below.

A. Core Courses

The requirement of these Core Courses is 14 credit hours (1st semester).

Course Code	Course Name	Credit Hours
CMMSPMC 500	Genomic Biomarkers	1 Credit Hour
CMMSPMC 501	Statistical Analysis of Genomic Information	1 Credit Hour
CMMSPMC 502	Ethical, Legal and Social Issues of Genomic Testing	2 Credit Hours
CMMSPMC 503	Genetic Studies of Human Populations and Diseases	2 Credit Hours
CMMSPMC 504	Gene-drug Interactions	2 Credit Hours
CMMSPMC 505	Applications of Next-generation Sequencing (NGS) and Molecular Microarrays in Diagnosis of Genetic Disorders	2 Credit Hours
CMMS 604	Research Methodology	2 Credit Hours
CMMS 621	Inferential Statistics and its Applications	2 Credit Hours

B. Specialized Courses

The requirement of these Courses is 14 credit hours (2nd semester).

Corse Code	Course Name	Credit Hours
CMMSPMS 600	Translational Genomics	2 Credit Hours
CMMSPMS 601	Identifying Genetic Variants Involved in Diagnosing Disease and Predicting Treatment Response	2 Credit Hours
CMMSPMS 602 *	Personal Pharmacogenetics	2 Credit Hours
CMMSPMS 603 *	Genetic Cancer Risk Assessment	2 Credit Hours
CMMSPMS 604 *	Genetic Counselling and Integration of Genetic Information	2 Credit Hours
CMMSPMS 605 *	Genetic Testing in Genomic Era	2 Credit Hours
CMMSPMS 606	Genomics, Proteomics and Metabolomics	2 Credit Hours
CMMSPMS 607	Genomic Disorders: Phenotype- Genotype Correlation	2 Credit Hours
CMMSPMS 608	Genome Wide Association Study (GWAS)	2 Credit Hours

* Optional Courses: Students take Course CMMSPMS602 or Course CMMSPMS603; Course CMMSPMS604 or Course CMMSPMS605

C. Diploma Project

Course Code	Course Name	Credit Hours
CMMSPMD 608	Diploma Project	4 Credit Hours

D. Master Research Project

Course Code	Course Name	Credit Hours
CMMSPMT 609	Thesis	8 Credit Hours

Methods of Assessment

Students' performance will be evaluated based on:

- Student Performance including presentations (30%)
- Written assignment (30%)
- Final written exam (40%)

Admission Requirements

- The applicant is a citizen of one of the GCC countries or a citizen of an Arab country and is a resident in one of the GCC countries.
- Nomination/no objection letter from the Ministry of Education or Higher Education of the applicant's country (GCC citizens).
- A medical degree or a bachelor's degree in one of the health sciences or related fields (for example, but not limited to, life sciences, bioinformatics, biochemistry, dentistry or pharmacy) from a university recognized by AGU.

- A minimum overall average of "Very Good" to be considered for the Master of Science and "Good" to be considered for the Diploma.
- Two years' experience in a health-related profession (Fresh graduates may be considered on merit).
- Evidence of adequate proficiency in the English language (Minimum TOEFL Score of 450 or IELTS of 5.0).
- Courses in molecular biology or genetics are required.
- Courses in biochemistry, biology and cell biology are recommended.
- Final acceptance shall be made after passing a personal interview.

Graduation Requirements

Master of Science

- Successfully complete a minimum of 28 credit hours of course work.
- Carry out a laboratory-based research project and successfully defend a written thesis (8 credit hours).
- Obtain a minimum cumulative GPA of 3.0 out of 4.0.

Diploma

- Successfully complete a minimum of 24 credit hours of course work.
- Satisfactorily complete a Diploma project (4 credit hours)
- Obtain a minimum cumulative GPA of 2.0 out of 4.0.

Program Faculty

Dr. Abdelhalim Deifalla	Professor, Department of Anatomy
Dr. Afif Ben Saleh	Professor, Department of Family and Community Medicine
Dr. Khaled Greish	Professor, Department of Molecular Medicine
Dr. Randah Hamadeh	Professor, Department of Family and Community Medicine
Dr. Ahmed Jaradat	Associate Professor, Department of Family and Community Medicine
Dr. Ghada Al-Kafaji	Associate Professor, Department of Molecular Medicine
Dr. Amani Al Hajeri	Assistant Professor, Department of Molecular Medicine
Dr. Cristina Skrypnyk	Assistant Professor, Department of Molecular Medicine
Dr. Jamil Ahmed	Assistant Professor, Department of Family and Community Medicine
Dr. Noureddine Ben Khalaf	Assistant Professor, Department of Life Sciences
Dr. Safa Taha	Assistant Professor, Department of Molecular Medicine


Circulatory
Respiratory
Digestive
Skeletal
Nervous
Master of Science in
Personalized Medicine
Renal
Immune