Program Medical Education Framework Guide


بسم الله الرحمن الرحيم

Program Medical Education Framework Guide

Program Mission:

The program is preparing physicians with cognitive, clinical and research competencies to provide health services that enhance community health locally and regionally.

Program Strategic Goals

G1. Graduating physicians who are qualified, skillful and accomplish job ethics.
G2. Enhance the practice of leadership, and effective communication.
G3. Develop the skills of teamwork, and self-learning
G4. Improving the quality of health services and community partnership
G5. Encouraging scientific medical research

Graduate attributes
Northern Border University Graduate attributes

GA1: National identity	GA1: demonstrate high standards of ethical and socially responsible behavior, as well as academic and professional honesty and integrity; contribute to finding solutions to social problems; and commit to being a responsible citizen.
GA2: Self-management & Critical thinking	GA2: Demonstrate self-management skills, self-learning and critical thinking, the ability to take initiative to self-develop according to specific standards, and ability to present evidence and arguments to make a decision unbiasedly.
GA3: Digital culture	GA3: Effectively use information technology, analytical, mathematical, and statistical tools to perform data analysis, suggest solutions, and solve problems using critical thinking.
GA4: Teamwork	GA4: Have the ability to lead a team, assume responsibility for performing tasks and developing work, achieve goals effectively, and promote health, psychological and social aspects.
GA5: Entrepreneurship	GA5: Identify the function of entrepreneurship and its requirements in the successful, commercial application.
GA6: Communication skills	GA6: Effectively communicate both verbally and in writing, using appropriate presentation forms, scholarly language, adequate reasoning for various issues and dealing with beneficiaries.

Program Graduate Attributes

In 2018, the Faculty of Medicine approved the alignment of the curriculum with the SaudiMeds framework; a framework comprises the essential learning outcomes and competences for the medical education in Saudi Arabia. Hence, we adopted the six major themes related to the description of the physician's duties and obligations as graduate attributes:

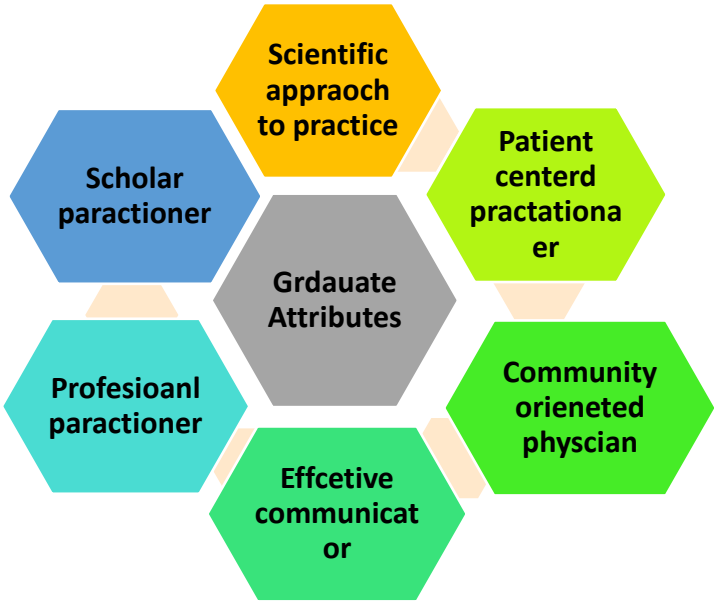


Figure (1): Northern Border University MBBS program graduates' attributes

- **Scientific approach to medical practice**; integrates and applicates basic, clinical, behavioral and social science in clinical practice.
- **Patient-centered practitioner**; establishes and maintains essential clinical and interpersonal skills to demonstrate proficient assessment and delivery of patient-centered care and management.
- **Community-oriented practitioner**; practices and understands the Saudi health care system and theapplication of health promotion and advocacy roles for the benefit and wellbeing of individual patients, communities, and populations.

- **Effective communicator**: effectively communicates with patients and their families and the practicing of collaborative care by working in partnership within a multi-professional team.

- **Professional practitioner:** committed to deliver the highest standards of ethical and professional behavior in all aspects of health practice and take a responsibility for own personal and professional development.

- **Scholar practitioner:** contribute to the advancement of medical practice with the rigors of scientific research.

Program learning Outcomes

The graduates will have the knowledge and applied skills to practice medicine reflectively and compassionately for the benefit of their patients and the community. They will maintain the highest standards of professional behavior through integrity, respect, and openness in communication, which will meet the expectations of the patients and sustain the trust of the community.

Knowledge and understanding:	
K1	Identify the human organs and tissues and their anatomical, physiological, biochemical, molecular, and cellular characteristics in health and disease
K2	Explain the epidemiology, clinical presentations, and management for diffe medical problems with their related Islamic, ethical and safety issues
K3	Describe the parts and regulations of Saudi healthcare system
K4	Discuss health promotion and disease prevention measures
K5	Explain the basics of medical informatics; evidence-based medicine, and scientific research and their applications in healthcare system.
Skills	
S1	Use clinical reasoning, collected data analysis, decision making, and proble solving skills in medical practice
S2	Distinguish the organs' morphological, functional, and biochemical feature health and diseases
S3	Apply the essential clinical skills
S4	Formulate appropriate management plans for patients with life-threatening common medical problems
S5	Practice certain maneuver for diagnosis of certain diseases and managemer life-threatening conditions.
S6	Communicate effectively via written and verbal skills with peers, patients, relatives, and authorities to express his knowledge, research, recommendat and instructions.
Values	
V1	Demonstrate professional attitudes and ethical behaviors of knowledgeable responsible, cooperative physicians
V2	Employ the skill of self-learning, self-reflection, and development through updated medical information from different approved sources.

Curriculum Design

It is clearly stated in the program development policy: "program should be developed in consultation with relevant stakeholders (current and past students, other academics, professional bodies and employers in both the private and public sector)" Program development guided by many documents include:

- NBU policies and guidelines for program development
- NQF standards and requirements
- SaudiMEDs Framework
- Academic Benchmarking
- Professional bodies as SCFHS
- Market needs

The choice of an educational philosophy will be driven by factors that may not be directly under the control or influence of the curriculum planner. For example, resources, culture and ethnographic, and available learning environments. It will be important that the curriculum must recognize the context in which healthcare will be delivered.

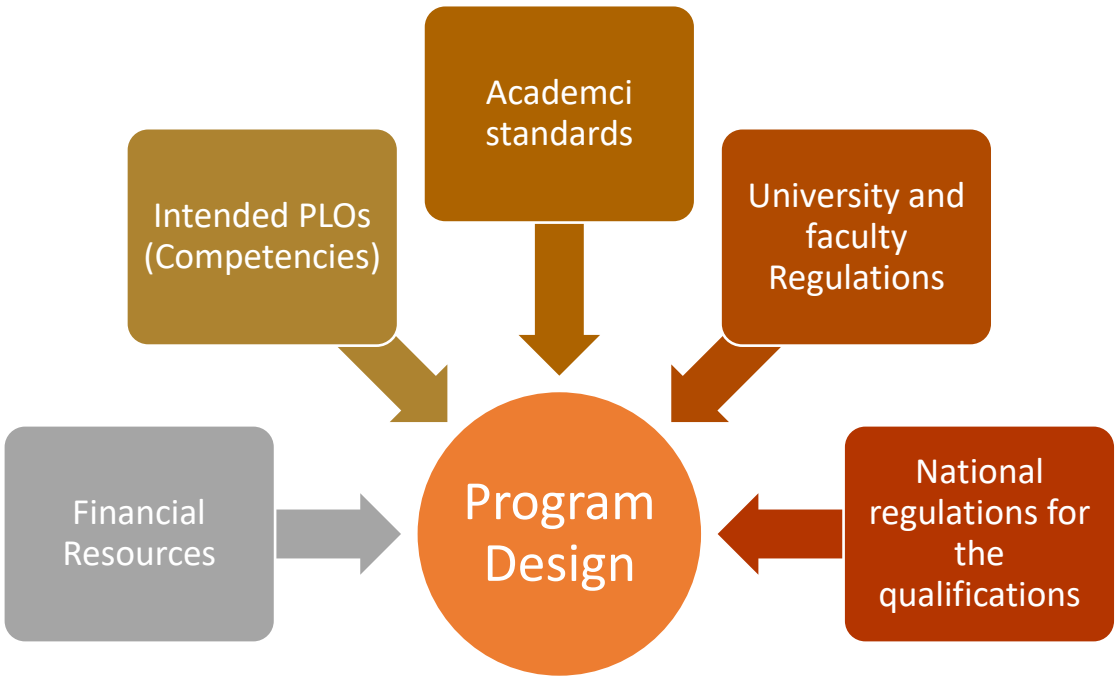


Figure (2): factors governing the academic program design

SPICES model stated that, the curriculum may be student-centered or teacher-centered, problem-based or information-oriented, Integrated/inter-professional or Subject-

/discipline-based, Community-based or hospital-based, Elective-driven or uniform, and Systematic or Opportunistic.

Northern Border Medical program adopts hybrid model which is a mix of the previously mentioned model. This hybrid model allows the most appropriate pedagogical method to be used under individual circumstances and at different times during the program. For example, the study plan includes Integrated/inter-professional as well as Subject-/discipline-based for better understanding for the basic knowledge of the subsequently learnt topics. Also, clinical practice should not be exclusively hospital nor community based/led, and a hybrid approach of hospital and community is appropriate as student is in need for hospital training as well as visiting primary healthcare community-based care clinics and community outreach healthcare campaigns in the extracurricular activities.

Additionally, based on the above philosophical model, the medical school is in need to take a view on the type of teaching it wishes to follow. Many 'traditional' medical courses rely heavily upon lectures to transmit information to students. Whilst this is a cost-effective method, doubts have been cast regarding the value of this approach to the learner. Small group working has advantages for the learner by allowing discussion of topics and giving the learner the opportunity to develop their own meaning of the information which, in turn, allows further progress towards independence and self-direction. It should be remembered, however, that some lectures can be inspirational and some small group work can fail to involve the student. A hybrid curriculum where there is a pragmatic approach to the use of lecture and small group activity may be a helpful compromise.

The program has some general courses which are related to the general sciences which can help their understanding for the medical sciences as well as some other courses covering topic in Arabic languages and Islamic culture which can improve their national identity concepts and improve their communication skills and work ethics. Additionally, the program has some elective courses that can be chosen a way from the medical studies. These general courses are expected to prepare them better to face challenges in the outside world. It promotes the student's intellectual and cognitive skills. The curriculum structure is shown in the following table

1. **Curriculum Structure:**

Program Structure	Required/ Elective	No. of courses	Credit Hours	Percentage
Institution Requirements	Required	**3**	**6**	**2.77**
	Elective	**2**	**4**	**1.85**
College Requirements	Required	**14**	**31**	**14.35**
	Elective	**0**	**0**	**0**
Program Requirements	Required	**40**	**170**	**78.70**
	Elective	**2**	**1**	**0.46**
Capstone Course/Project		**0**	**0**	**0**
Field Experience/ Internship	**Internship**	**0**	**0**	**0**
Others	**Free courses**	**2**	**4**	**1.85**
Total		**63**	**216**	**100**

2. Program Study Plan

MBBS program consist of 18 levels and one year field experience (internship). The arrangement of the courses within these levels is based on Bruner's spiral model with the following three main criteria:

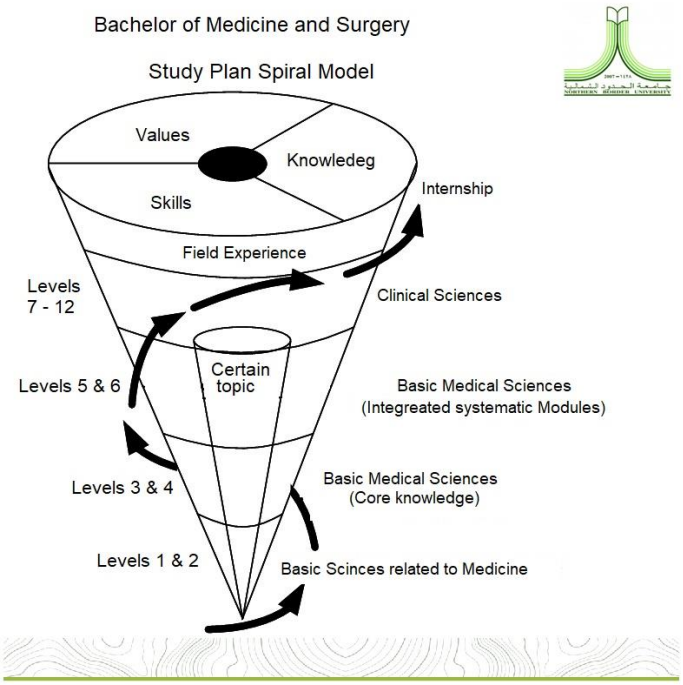


Figure (2): Spiral models of levels arrangement in MBBCh of the Faculty of Medicine , NBU

1. Cyclical: Students should return to the same topic several times throughout the program wit different groups of staff (Horizontal integration)

2. Increasing Depth: Each time a student returns to the topic it should be learned at a deeper level and explore more complexity (Vertical integration)

3. Prior Knowledge: A student's prior knowledge should be utilized when a topic is returned to so that they build from their foundations rather than starting a new.

The Integration Dimensions:

The adopted curriculum spiral model of integration is the most ideal form, which represents a combination of both horizontal and vertical integration, uniting integration across time and across disciplines. This model is well- established in the current curriculum, explaining the two main dimensions as follows:

- **Horizontal integration:** defined as integration across disciplines but within a definite period of time. The interdisciplinary approach is well-established in organ-system courses at the pre- clerkship phase, where faculty members from basic medical sciences and clinicians sit together to agree upon the content and depth for each

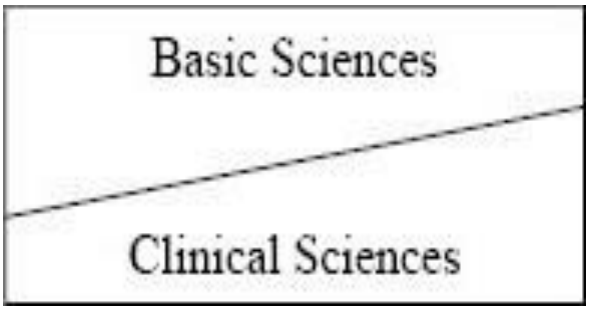
topic. For that each course committee contains representatives from different basic medical science departments in addition to clinical departments. This is also evident in some clinical phase courses like (Laboratory Medicine 1200404, anesthesia 1200501, patient safety 1200601 and Emergency medicine 1200502).

- **Vertical integration:** represents integration across time, attempting to improve education by disrupting the traditional barrier between the basic and clinical sciences. Fundamental role of basic sciences is crucial in acquiring the clinical knowledge and skills. Example is the integration of basic medical sciences and clinical cases (organ- system courses) and then progressively increasing clinical responsibility towards and during the clinical phase.

Curriculum contents:

The content for each course in the program considers the program vertical and horizontal integration among the Basic medical, behavioral, social and clinical sciences. The depth of content across time follows the wedge shape of integration, which implies that both basic medical sciences and clinical topics are taught throughout the curriculum, but with a predominance of basic medical sciences in the early years, with increasing time devoted to clinical subjects as the program progresses as illustrated in the figure 3.

Figure (3): Wedge approach to vertical integration:



Sequence of the Curriculum content

- The sequence is the order in which the information is presented to the student. How to sequence the curriculum depends on the development of the students cognitively. The current curriculum sequencing approach is based on: simple-to-complex, prerequisite learning, whole-to-part learning, and chronological learning. These approaches are described as follows, and are evident in curriculum map in program description.
- Simple-to-complex learning: is self-explanatory, the curriculum is designed in such a way that simpler concepts are presented before more complex ones.
- Pre-requisite learning is a form of sequencing in which certain knowledge must come before more advanced knowledge. This is clearly stated in the study plan and program specification.
- Whole-to-part learning provides students with an overview of the subject before going into specific details. This is best seen in introductory general core courses before the system-based modules.
- Chronological learning: the contents of the curriculum provided in a chronological manner in order to achieve the above-mentioned approaches.
- This approach was adopted for sequencing of the courses within the program and consequences of contents within the course were prepared and documented in the course timetable, which is based on clear guidelines and policies, ensuring that the sequencing of topics is carried out.

Programs levels:

Levels 1-3 (First Year): students learn basic concepts in chemistry, physics & biology as well as more of the English and Arabic languages in addition to communication skills, and the basic medical terminology.

Levels 4-9 (Pre-clerkship) (during the second and third years): students study the basic academic medical sciences as core courses in the second year and integrated body

system-wise curricula in the 3rd year.

Levels 10-18 (Clerkship) (during the 4th, 5th and 6th years): they include the clinical clerkships in the hospitals and community health settings where the students practice the skills, attitudes and behaviors specific to each discipline and common to the practice of medicine in general.

Internship: Upon completion of all course requirements of the first six years the students spend 12 months as arranged by the internship unit.

The internship program components include:

- Mandatory rotations of 2-month duration in
  - General surgery
  - Internal medicine
  - Obstetrics and Gynecology
  - Pediatrics
- Mandatory rotations of 1-month duration in Emergency medicine and family medicine
- Added to that is two elective rotations of one month duration for each one, which depends on the student choice from a wide range of specialties (e.g. radiology, dermatology, urology etc.)

The Credit Hour: A credit hour represents one and half an hour of lectures, PBL, seminar, tutorial, bed side teaching or two-hours of practical, per week for one semester (10 weeks).

Program Medical education academic standards

Standards in medical education are professional attitudes, ethics and statements about knowledge and clinical skills graduates should have and be able to demonstrate. Several attempts have been made about the structure, process or product of medical education.

Five-star doctor

In 1991, the World Health Organization (WHO) tried to define standards of medical education in terms of the needs of the local community. The product of this effort was defined as a five-star doctor (care provider, decision maker, communicator, community leader, and manager)

The concept of the five-star doctor is proposed as an ideal profile of a doctor possessing a mix of competencies to carry out the range of services that health settings must deliver to meet the requirements of relevance, quality, cost-effectiveness and equity in health.

Care-provider: Besides giving individual treatment "five-star doctors "must take into account the total (physical, mental and social) needs of the patient. They must ensure that a full range of treatment - curative, preventive or rehabilitative will be dispensed in ways that are complementary, integrated and continuous. And they must ensure that the treatment is of the highest quality.

Decision-maker: In a climate of transparency "five-star doctors" will have to take decisions that can be justified in terms of efficacy and cost. From all the possible ways of treating a given health condition, the one that seems most appropriate in the given situation must be chosen. As regards expenditure, the limited resources available for health must be shared out fairly to the benefit of every individual in the community.

Communicator: Lifestyle aspects such as a balanced diet, safety measures at work, type of leisure pursuits, and respect for the environment and so on all have a

determining influence on health. The involvement of the individual in protecting and restoring his or her own health is therefore vital, since exposure to a health risk is largely determined by one's behavior. The doctors of tomorrow must be excellent communicators in order to persuade individuals, families and the communities in their charge to adopt healthy lifestyles and become partners in the health effort.

Community leader: The needs and problems of the whole community - in a suburb or a district - must not be forgotten. By understanding the determinants of health inherent in the physical and social environment and by appreciating the breadth of each problem or health risk "five-star doctors" will not simply be treating individuals who seek help but will also take a positive interest in community health activities which will benefit large numbers of people.

Manager: To carry out all these functions, it will be essential for "five-star doctors" to acquire managerial skills. This will enable them to initiate exchanges of information in order to make better decisions, and to work within a multidisciplinary team in close association with other partners for health and social development.

Alignment of the program graduate attributes with Five star-doctors competencies

SaudiMED	Five-star doctor					
	Competencies	**Care provider**	**Decision maker**	**Communicator**	**Community leader**	**manger**
	Scientific approach to practice	√	√			
	Patient centered physician	√	√	√	√	√
	Effective communicator			√		√
	Community oriented practitioner			√	√	
	Professional practitioner	√		√		√
	Scholar practitioner	√			√	

The matrix shows strong alignment between the program Graduate attributes and five-star competencies. Each Five-star competency is aligned with at least 2 program graduate attributes.

Alignment of the program learning outcomes with Five star-doctors competencies

PGA	K1	K2	K3	K4	K5	S1	S2	S3	S4	S5	S6	V1	V2
Care provider	√	√	√	√	√	√	√	√	√	√	√	√	√
Decision maker						√		√					
Communicator			√	√							√	√	
Community leader			√	√							√	√	
manger			√								√	√	√

The matrix shows strong alignment between PLOs and five-star competencies. Each Five-star competency is aligned with at least 2 program graduate attributes.

SaudiMED

A national competence framework has been developed by medical schools in the Kingdom of Saudi Arabia (KSA), which adopted by National Commission for Academic Accreditation & Assessment (NCAA) and published as program learning outcomes and the expected characteristics of medical education graduates. Saudi Med started a project that began initially as an effort to develop a national consensus amongst Saudi stakeholders for the vision of the 'Saudi Future Doctor' and to develop the essential learning outcomes for medical schools. It aimed to provide some ways to assure minimum standards in the undergraduate medical education. Saudi MED framework was expressed as a three-level model:

- Level I that comprises six domains detailed further in the next level. The focus of this level is on describing the relevant physician's duties and obligations.
- Level II that comprises seventeen essential competences a physician should obtain. These are further detailed at the next level, while paying special consideration to program specialization and level.

- Level III that comprises eighty learning outcomes the committee deems essential for all undergraduate medical programs in Saudi Arabia. However, this level could vary from one program to another. For example, they could vary from undergraduate to postgraduate to life-long learning.

  This level is strongly connected to the nature of medical education and practice of a given specific specialty.

- Level IV comprises learning outcomes that are identified by a joint committee between the Saudi Deans and Education Evaluation Commission (EEC-HES) to set a minimum required standards to medical schools in Saudi Arabia. Special thanks to the Scientific Committee and the Joint Committee – EEC-HES & Saudi Medical Deans Sub-Committee, for their valuable contribution in executing this project.

  The effective fulfillment and application of the framework will ensure harmonization of Saudi Medical Graduates and the flexibility of medical schools and their ability to focus on some areas of the major domains, which will be later reflected in the National Saudi Medical Licensing Exam and progresstests.

Why SaudiMed?

In Saudi Arabia, a national call to define the competencies of medical graduates has been given ahigher priority with the expansion of medical education in the KSA. This article describes the development of a competency-based framework for the Kingdom. Initial work to develop a national consensus amongst Saudi stakeholders for the vision of the ‘Saudi Future Doctor’ and the essential learning outcomes for medical schools was conducted between 2005 and 2007. This concurred with a regional move to define the ‘Learning Outcomes’ for the undergraduate medical programs in the Arabian Gulf countries by the Gulf Cooperation Council Medical Colleges Deans’ Committee (GCCMCD 2005). The aim was to provide a means of guaranteeing minimum standards in undergraduate

medical education. In 2009, the newly established Committee of Deans of Medical Schools in the Kingdom launched a taskforce with the remit of developing a national competency framework for Saudi doctors. At the same time, the NCAAA 2010 developed a draft for the 'Learning Outcomes for Bachelor Degree Programs in Medicine'. Recently NCAAA adopted the SaudiMED framework as learning outcomes for all medical graduates.

The rationale behind shifting to SaudiMED can be summarized as:

- The call for alignment of the medical curricula with defined graduate profile (SaudiMed).
- New teaching and assessment techniques are becoming of interest to medical schools in order tosupport the integration.
- The publication of the Global Consensus on social accountability in medical education.
- Weaknesses in the curriculum in relation to the NCAAA standards.
- Managerial difficulties, large numbers of courses
- Accreditation requirements (standards, NQF)
- Recommendation of self-study report.

NBU MBBS program adopts the 6 competencies of Saudi MED as gradaute attributes, which are aligned with the institutional university gradates' attributes

Alignment of Program graduate attributes with NBU graduate attribute:

		Program GA (SaudiMED competencies)					
		Scientifically approach to medical practice	Patient-centered practitioner	Community-oriented practitioner	Effective communicator	Professional practitioner	Scholar practitioner
NBU GA	National identity	√				√	
	Self-management and Critical thinking	√	√			√	√
	Digital culture				√		√
	Teamwork			√	√	√	
	Entrepreneurship			√	√	√	
	Communication skills			√	√	√	

The matrix shows strong alignment between program GA (SaudiMED competencies)

and university Graduate attributes. Each SaudiMED GA is aligned with at least 2 NBU graduate attributes

Alignment of Program learning outcomes with program graduate attributes (Saudimed Competencies)

PGA	K1	K2	K3	K4	K5	S1	S2	S3	S4	S5	S6	V1	V2
GA1: Scientific Approach to Practice	√	√				√							
GA2: Patient care						√	√	√	√	√			
GA3: Community oriented practice			√	√									
GA4: Communication and collaboration					√						√	√	
GA5: Professionalism		√										√	√
GA6: Research and scholarship					√	√							√

The matrix shows strong alignment between program GA (SaudiMED competencies) and PLOs. Each SaudiMED GA is aligned with at least 2 PLOs.

Program Study Plan

First year

Level	Course Code	Course Title	Pre-Requisite Courses	Credit Hours
Level 1	1606101	English-1	----	3
	1101102	Physics	----	3
	1102102	Chemistry	----	3
	1601101	Islamic Culture -1	----	2
	1608102	Health & Fitness	----	1
Level 2	1606102	Enghlish-2	----	3
	1105102	Computer Skills	----	3
	1607101	Communication Skills	----	2
	1602101	Arabic Language	----	2
	xxxxx	Free course- 1	----	2
Level 3	1210131	Medical Terminology	----	2
	1104102	Mathematics	----	3
	1103102	Biology	----	3
	1601201	Islamic Culture-2	----	2
	xxxxx	Free course -2	----	2

Second year

Level	Course Code	Course Title	Pre-Requisite Courses	Credit Hours
Level 4	1207221	Cells & Tissues	Pass 1st year	2
	1207211	Anatomy-1	Pass 1styear	5
	1203211	Physiology	Pass 1styear	3
	1601XX	*Elective Islamic-1	1601201	2
Level 5	1211211	Biochemistry-1	Pass 1styear	5
	1207213	Anatomy-2	Pass 1styear	2
	1207212	Embryology	Pass 1styear	1
	1204211	Pathology	1207221	4
Level 6	1212221	Parasitology	Pass 1styear	2
	1211212	Biochemistry-2	1211211	3
	1212211	Microbiology	Pass 1styear	4
	1208213	Pharmacology	Pass 1styear	3

Third year

Level	Course Code	Course Title	Pre-Requisite Courses	Credit Hours
Level 7	1200301	Musculo-skeletal System	1207211	5
	1200302	Immune, Blood and Lymphatic System	1212211	4
	1200303	Cardiovascular System	1203211	3
Level 8	1200304	Respiratory System	----------	3
	1200306	Endocrine System	1203211	4
	1200308	Gastrointestinal System	1207211	5
Level 9	1200305	Urinary System	1203211	3
	1200307	Reproductive System	1204211	3
	1200309	Nervous System & Special Senses	1203211	6

Fourth year

Level	Course Code	Course Title	Pre-Requisite Courses	Credit Hours
Level 10	1201411	Internal Medicine-1	Pass 3nd year	7
	1200401	Medical Ethics	Pass 3nd year	1
	1200402	Forensic Medicine	Pass 3nd year	2
	1601XXX	*Elective Islamic2	1601201	2
	*The student should choose one of the following courses; Islamic Culture -5 (1601401) or Islamic Culture-6 (1601402)			
Level 11	1202411	Surgery- 1	Pass 3nd year	7
	1200403	Radiology	Pass 3nd year	2
	1200404	Laboratory Medicine	Pass 3nd year	2
		*Elective specialization-1	Pass 3nd year	1
	*The student should choose one of the following courses; Diagnostic surgical Pathology (1204411) or Medical Genetics (1211411)			
Level 12	1210411	Community Medicine	Pass 3nd year	5
	1202421	Ophthalmology	Pass 3nd year	3
	1205411	ENT	Pass 3nd year	3
	1208411	Complementary Medicine	Pass 3nd year	1

Fifth year

Level	Course Code	Course Title	Pre-Requisite Courses	Credit Hours
Level 13	1206511	Pediatrics	1201411	12
Level 14	1209511	Obstetrics & Gynecology	1202411	10
	1202541	Urology	1202411	2
Level 15	1202531	Orthopedics	1202411	4
	1201531	Neurology	1201411	3
	1201521	Dermatology	1201411	2
	1200502	Emergency medicine	1201411 1202411	2
	1200501	Anesthesia	1202411	1

Sixth year

Level	Course Code	Course Title	Pre-Requisite Courses	Credit Hours
Level 16	1201611	Internal Medicine-2	1201411	12
Level 17	1202611	Surgery - 2	1202411	12
Level 18	1201641	Psychiatry	1201411	4
	1210691	Medical Research	1210411	2
	1210611	Family Medicine	1210411 1201411 1202411	5
	1200601	Patient Safety	1201411 1202411	1

Educational Philosophy

The program involves the active and intentional participation of students, faculty members, and staff. Learning is most meaningful when students take responsibility for their own education by committing the time, effort and thinking necessary to succeed, interact with faculty members inside and outside of class, engage with other students in the learning process, and pursue opportunities to apply their learning in communities outside the classroom. Staff enhance the learning environment by maintaining open communication with students and faculty, ensuring the availability of resources, and otherwise assisting the learning process.

Basic principle of the educational philosophy:

1. Student-faculty contact and interaction: Learning is enhanced by frequent student-faculty contact in and out of classes. This is an important factor in transfer knowledge, values and skills with student motivation, involvement and success. A faculty member's interest, availability and responsiveness are critical in fostering these changes in students.
2. Cooperation and collaboration: Good learning, like good work, is collaborative and social, not competitive and isolated. Learning to work well with peers through team activities and projects develops in students the necessary set of skills required for success in life, the workplace, and in global societies.
3. Active learning: Learning is enhanced when students are required to become mentally active participants in the learning process.
4. Feedback and evaluation: Learning is enhanced by feedback that is prompt, specific and related to articulated learning outcomes. Feedback that includes suggestions for improvement enables them to further reflect on what they have

learned, what they still need to learn, and how to become responsible for their own learning including self-assessment and peer evaluation.

5. Time on task: Tasks is timed for students and faculty members Allocating realistic amounts of time means effective learning for students and effective teaching for faculty.

6. High expectations: Academic excellence is ensured by having high expectations for students, faculty members, and staff, which help them to demonstrate their responsibility for their own learning of how to become productive, creative, ethical and engaged citizens.

7. Diversity: The program supports different teaching strategies, as the program expects students to learn in multiple ways, as it is expected that faculty members to approach the art and science of teaching in multiple ways.

8. Modeling professional behavior: Learning is enhanced by faculty members and staff modeling professional academic integrity behavior for students.

9. Inquiry, research, creative and critical thinking: Learning is enhanced by engaging students in transformational activities via learning and using tools of inquiry and research and further developing their ability to think creatively, abstractly, and critically. Students must also learn the importance of the nexus between theory and practice.

10. Learning-centered: In a learning-centered organization, students, faculty and staff are simultaneously challenged and supported by a community of colleagues who demonstrate care, respect, empathy and passion for learning

Teaching & Learning strategies and Methods

Introduction

Implementation of curriculum involved many instructional strategies and methods.

- Educational strategies involve both:
  - Contents: refer to specific materials to be included in the curriculum
  - Methods: are the ways in which the content presented.

- Adopted strategies based on principles and issues of teaching and learning
  - Teaching is what educators do, but Learning: is what happens within the learners.
  - Teaching and Learning theories.
  - Learning style: how can the students learn?
  - Learning objectives/outcomes
  - Use multiple educational methods
  - Choose educational methods that are feasible in term of resources.

- Determination of the content: Based on:
  - Learning outcomes/Objective
  - The amount of materials: It should not be too little to lack substance, or too much to overwhelmthe learners.
  - Materials should be presented in chronological manner

The major instructional strategies

- **Direct Instruction**: is highly teacher-directed and is among the most commonly used. This strategyis effective for providing information or developing step-by-step skills. It also works well for introducing other teaching methods, or actively involving students in knowledge construction. Example: Lecture (L), Drill & Practice (P), and Demonstrations.

  Northern Border medical program ***lecturing*** is a mix between 3 models:

  (1) The Classical—in which a lecture is divided into broad areas and then subdivided. This is the easiest method of structuring a lecture and mainly teacher centered and more applied in the early years of the program for introduction of knowledge.
  (2) The Problem Centered—in which a problem is outlined, and various solutions are offered. Handled well, this method can play on the curiosity or clinical interests of the students.
  (3) The Sequential—in which a problem or question is presented and followed by a

chain of reasoning which leads to a solution or conclusion. It is easy to lose the students' attention when using this method so the use

- **Indirect Instruction**: is mainly student-centered, although the two strategies can complement each other. Possible Methods include: Flipped class room.

  A ***flipped classroom*** is an instructional strategy and a type of blended learning, which aims to increase student engagement and learning by having pupils complete readings at home and work on live problem-solving during class time. This pedagogical style moves activities, including those that may have traditionally been considered homework, into the classroom. With a flipped classroom, students watch online lectures, collaborate in online discussions, or carry out research at home, while actively engaging concepts in the classroom, with a mentor's guidance.

- **Interactive instruction:** is relies heavily on discussion and sharing among participants. Students can learn from peers and teachers to develop social skills and abilities, to organize their thoughts, and to develop rational arguments. Possible Methods: (Small group teaching methods) as: Problem- based learning (PBL), Tutorials (T), Student-led seminar (S), workshops, Case presentation (CP), and Laboratory Groups

  In ***problem based learning*** sessions, Problem/scenario triggers the interactive discussion among the small group. Students discuss and find solutions by argumentation. Clinical reasoning focuses the history, examination data and investigations as well as procedures required to reach the correct diagnosis in an efficient manner.

  Seminars are group or personal assignment which build the skills for student interaction, team formation with new knowledge acquisition, commitment, task completion, presentation skills as well as augmentation and discussions skills.

  Tutorial can be large or small group activity that encourages students to focus on a topic and contribute to the free flow of ideas. A pre reading material or clinical case is provided as a trigger for open discussion with minimal

interaction of facilitators during the task solving, at the end there is concluding interactive discussion with the facilitator to assess the students' performance and knowledge acquisition.

Laboratory practical are mix of direct instruction, demonstrations as well as cooperative approach with interaction between the student and the student and between the student and the teacher is made in which the explanation is carried out by the specialized faculty member, and then the students practice the skill under the supervision of the specialist. It may be through the experience of gaining skills. Facilitated learning through models, anatomical specimens and cadavers, samples, and microscopes

- **Experiential learning**: is inductive, learner-centered, and activity oriented. Personalized reflection about an experience and the formulation of plans to apply learning to other contexts are critical factors in effective experiential learning. Possible Methods include: Bedside Teaching (BST), Simulations (Sim), Field visit, and Role-playing.

  Bedside teaching is a vital component of medical education. It is applicable to any situation where teaching is imparted in the presence of patients. In teaching in the patients' presence, learners have the opportunities to use all of their senses and learn the humanistic aspect of medicine such as role modeling, which is vital but difficult to communicate in words.

  Simulation is a generic term that refers to an artificial representation of a real world process to achieve educational goals through experiential learning. Simulation based medical education is defined as any educational activity that utilizes simulation aides to replicate clinical scenarios. There are different types and classification of simulators and their cost vary according to the degree of their resemblance to the reality, or

'fidelity'. Simulation- based learning is expensive. However, it is cost-effective if utilized properly. Medical simulation has been found to enhance clinical competence at the undergraduate and postgraduate levels.

Field visit in the program is mainly implemented in the medical internship year. The student gain experience via sharing in the clinical tasks in outpatient clinics, wards round, operating heaters and on call duties under supervision from the responsible consultant or other senior clinical staff. This strategy improve the clinical knowledge and skills as well as communication with patients, their relatives and other members of the healthcare team in addition to familiarity with the healthcare system in Saudi Arabia.

Role play idea of role-play is that of asking someone to imagine that they are either themselves or another person in a particular situation. They are then asked to behave exactly as they feel that person would. In order for a simulation to occur the participants must accept the duties and responsibilities of their roles and functions. For the acquisition of patient-centered interviewing skills we tend to use the approach in which students play their role as a medical student so they are expected to perform as they would in real clinical encounters. However, there are many variations on this theme. Role-play can be fully scripted (all players act from verbatim scripts) or partially scripted (players have certain prompts – often an opening line). Alternatively, one player (e.g. patient) is given a description of their role while the other (e.g. student) is provided with their task. Players can rotate through roles within a single role-play (switching) with the intention of gaining insight into other roles or perspectives or players can be substituted at various points in the role-play by observers.

Self-Directed Learning/ Independent Learning: It refers to the range of instructional methods which are purposefully provided to foster the development of individual student initiative, self- reliance, and self-improvement. In this educational strategy

where students decide, with or without guidance, what and how they will learn. This can be done individually or through group learning, but the general concept is that students take over their learning. Possible Methods include Homework/ Assignment, and Research Projects.

Mentorship for staff commitment to learning strategies and assessment methods

The course/ module committees is a heart for successful implementation of integrated curriculum. At faculty of medicine – Northern Border university, course committee provides academic, mentorship and management roles and works in agreement with the Medical Education Unit (MEU) principles.

A course coordinator and course committee are responsible for ensuring effective management of a course and delivery of a coherent and relevant curriculum that aligns learning outcomes at course and program level with teaching, learning and assessment approaches within a strong pedagogical framework. The course committee is also responsible for ensuring that delivery and management of the course follows Faculty and University educational policies and regulations. Course committee is responsible in maintaining, updating and revising the course databases (as: course specification, timetable, exam blueprint, course report, …….) to assure high quality of this database with help of different parties in the faculty, which governing program planning, implementation and evaluation (Annex 2.3.1.1 course coordinator guide).

Planning phase

The program established tools that ensure and monitor the adherence of the teaching staff to the learning and teaching strategies as follows:

- There is a clear guide for course coordinators and course committee which regulate the process in the course from planning up to the evaluation and quality management.

- There is a clear policy of course specification, planning, implementation, delivery and reporting which control the process of course design, implementation and reporting
- Before the beginning of any course, the course coordinator and course committee update the course specifications based on action plan in previous course report, MEU recommendations and curriculum and study plan committee recommendations. The course specifications consists of; course identification and general information, course objectives, course description, topics to be covered, learning domains and CLOs, teaching strategies that correspond to each CLO, assessment methods that are aligned to the teaching strategies and CLOs, schedule of assessment tasks for Students during the course, students' academic counselling and support, learning resources, facilities required and finally, course evaluation and improvement processes.
- The course committee translate the course specification into course blueprint, study guide then submit it to the students before beginning of the course and
- Course plan set by course committee after updating the course specification in form of course timetable, which state the topic, name of instructor, type of instruction, date and time. The course timetable approved by course committee and the department.
- The course timetable sent to the student before the beginning of any course.

Implementation and follow-up Phase

- Course implementation plan assure that the course will be implemented according to what had been planned by developing follow-up and monitoring plan (specify the task, time frame and responsibilities). (Annex 2.3.1.8 Course task distribution & Follow-up Plan with example).

- Course coordinators distribute the following documents:
    - Course timetable and study guide to all faculty members participating in teaching of the course at least one week before start of the course.
    - Course timetable and student guide to leader of the students to be circulated for all student in the class at least one day before start of the course.
    - Course timetable to the directory of faculty administration at least one day before start of the course to secure the transportation for any clinical teaching. educational resources and facilities, Simulation Unit, Dissecting room, Laboratories.
- Examinations should run as described in Student Assessment Policy. Course coordinator, year coordinator, Head of Examination and time schedules Unit, Vice-Dean for Clinical Affairs and the Vice-Dean for the Female Section are responsible for monitoring the implementation of the course activities and solving the related problems.
- Any complaint from the male students and the teaching staff during the implementation of the course is directed to the supervisors of Academic or clinical Affairs, or the supervisor of the vice deanship of students' section who are responsible for solving the problem.

Teaching effectiveness

The FOM-NBU follows a comprehensive system for evaluation of teaching effectiveness in all courses, that monitored by departments and faculty academic and clinical Affairs.

There are three elements to consider when evaluating teaching effectiveness within a particular context:

1. Criteria – attributes of effective teaching
2. Evidence – documentation of teaching considered in the review process
3. Standards – expectations of quality and quantity

- Criteria: The attributes of effective teaching include:

Area	Criteria
Content	Accuracy/mastery, Updated, sufficient
Course design	Based on CLOs which are aligned with PLOs
Teaching assessment	Appropriate the CLO More student-centered strategies
Resources and facilities	Appropriate and available
Assessment method	Feasible and aligned with the outcomes Assessment runs as planned in the blueprint
Mentoring & advising	Organized and announced to students and staff members

- Evidence – documentation of teaching considered in the review process for the program

Area	Criteria
Assessment Results	Direct assessment results
Student evaluation	- Staff member evaluation - Course evaluation survey - Program evaluation Survey - Student experience survey - PLOs survey
Staff member self-evaluation	- Staff satisfaction survey - Teaching self-evaluation survey - Teaching portfolio
Peer to peer evaluation	- By teaching peer to peer evaluation committee - Peer evaluation of courses
SMLE results	- National exam program students' performance
Employer evaluation	- ESS
Alumni evaluation	- AAS

- **Standards**

Standards articulate expectations of quality or quantity for each evaluation criterion. As with criteria and sources of evidence, the corresponding standards should fit the context in which teaching is evaluated

The following are examples of levels of achievement:

- "Compelling evidence... some evidence... no evidence"
- "Innovative... current... outdated"
- "Extensive... specific... vague"
- "Above average... average... below average"
- "Excellent... satisfactory... unacceptable"

- “Exceptional... adequate... needs work... absent”
- “Excellent... very good... good... fair... poor
- “Advanced... professional... novice”

Peer evaluation:

- Peer review serves many functions in the process of evaluating faculty, courses, or entire programs. Peer review is evaluation, by colleagues or peers, of all teaching- related activities for either formative (for development) or summative (for personnel decision) purposes. Components of either type of review may include course materials, student evaluations, teaching portfolios, documentation of teaching philosophy, teacher self-assessments, classroom observations, and other activities that may be appropriate to a discipline

- The proposed peer review of teaching process is one that is designed to be more formative than summative. It is a component of a continuous improvement program. Its main purpose is to provide course coordinator and course committee faculty with meaningful feedback that will help them set goals and take steps toward improving course design and implementation and assessment.

Assessment Methods

Introduction

Assessment is the process of forming a judgment about the quality and extent of student achievement or performance, and therefore by inference a judgment about the learning itself. Assessment inevitably shapes the learning that takes place; that is, what students learn and how they learn it should reflect closely the purposes and aims of the course of study.

Assessments should be both formative and summative.

- **Formative Assessment:** is any form of assessment that will not contribute to the final grade of a student. Can be done at any point of the course, planned by the teachers, its main aim is to monitor the progress of student's learning. Feedback to the students about their performance is very crucial.
- **Summative assessment:** is any form of assessment that will contribute to the final grade of a student.

Assessment Components

Based on Miller's pyramid the PLOs cover the four levels, which proposes clinical competence in multiple levels: "Knows," "Knows How," "Shows," and "Does." A candidate "knows" first before progressing to "knows how."

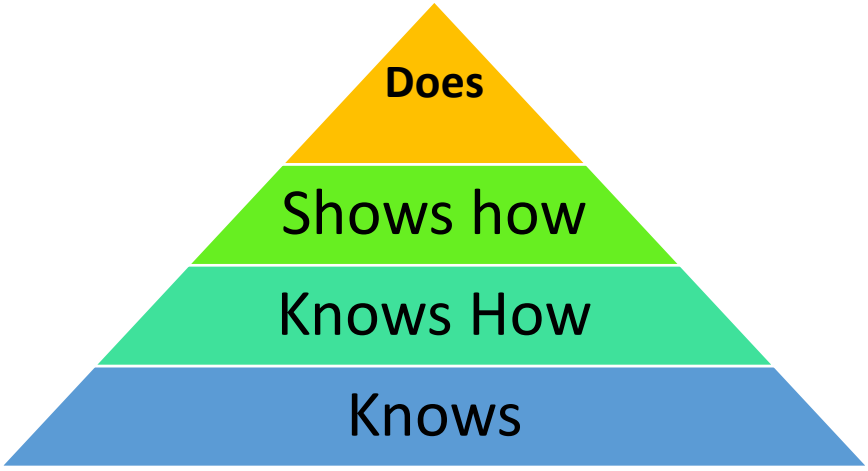


Figure (3): Miller's pyramid for assessing clinical competence

In other words, "knows" is analogous to factual knowledge and "knows how" is equivalent to concept building and understanding. At a higher level, a candidate "shows how" i.e. develops the competence to "perform." At the highest level, the candidate "does" i.e. actually carries out the concerned tasks competently in real life situations. Selection of assessment methods based on the target of selected items:

- Mastery-Type Items: measures essential minimums that all examinees should know
- Power-Type Items: designed to measure what typical examinees are expected to know
- Speed-Type Items: designed to assess higher level concepts and skills expected of the most able of examinees.

Assessment instruments vary considerably in their uses to test different levels of competence as follows

- Assessment of Knows and Knows How level (knowledge):
  - Written Exam: (MCQs & SAQs)
  - Oral Examination
- Assessment of Shows How (skills and competence):
  - OSPE & OSCE
  - Long Case
  - Short Case
- Assessment of Does (skills and competence):
  - PBL checklist
  - CP checklist

- Logbook rubric
- Assignment rubric

The weight for each exam component should be clearly stated in the course specification and provided to the student in advance at the beginning of the course.

- Continuous assessment: Reflect student participation such as contribution to class discussions and by such assignments as homework, written reports, research project, laboratory projects, preparation for tutorials and seminars etc.,
- Quizzes and/or Mid-Course Examination: Conducted at the mid of the course.
- Final Exam: Conducted at the end of the course.
- Resit Examination: Those who fail in the course assessment will have to appear in the resit exam for all the courses he/she failed in at the end of the same year if eligible to sit for the resit exam.

The following are tools to assure the quality of the assessment:

- Optimizing assessment: by planning to use multiple appropriate methods: suitable for the assessed outcome through Miller's Pyramid and Bloom's Taxonomy level of developing educational objectives
- Using course blueprint
- Using available resources
- Multiple assessors; try to avoid inter-rater reliability and variance.
- The selection and training of assessors.
- A reconceptualization of the role of psychometrics.
- A recognition of the importance of group
- Double check of model answers.
- Revision exam item analysis.

Field experience training effectiveness

Internships have become an essential bridge between college and the real working world. The internship objectives:

- To apply and refine medical knowledge through clinical training.
- To act independently and master decision making process.
- To coherently work with other health profession team members, know their roles, responsibilities, limitations and how to seek advice when needed appropriately.
- To deal with patient and his relatives professionally.
- To acquire nonclinical skills needed by physician such as: communication skills, presentationskills, administrative skills and others.
- To apply Muslim physician code of ethics in all of his deeds and adhere to it at all times.

The program follows Kirkpatrick's Four-Level Training Evaluation Model to objectively analyze the impact of medical internship training to evaluate how well your team members learned and improve their learning in the future. Donald Kirkpatrick, former Professor Emeritus at the University of Wisconsin, first published his model in 1959. He updated it in 1975 and 1993. The four levels are **Reaction**, **Learning**, **Behavior**, and **Results**. As it is agreed that implementing all levels of the Kirkpatrick model can be not feasible and time-consuming process and as the students are graduated after medical internship to the labor market, the medical internship unit measure the effect of training on students' behaviors and results as one level from the employers' feedback in the employer satisfaction survey.

Level 1: Reaction

Purpose: Measuring how engaged they were, how actively they contributed, and how they reacted to the training. This helps to understand how well they received it. This

can support improvements to future programs, by identifying important topics that might have been missing.

Methods:

Field experience student survey

Field experience supervisors survey.

Parameter
Internship office regulation were clear and easily applied
Internship staff were helpful and friendly
Roles and regulations of the internship were available to us
The introductory meeting about the internship before its start was beneficial
I have been informed about the skills that I should gain during the internship
I have received the required instructions and supervision in the internship hospitals and primary healthcare centers
Generally, I am satisfied about the year of internship

Level 2: Learning:

Level 2 focuses on measuring what your trainees have and haven't learned. In the New World version of the tool, Level 2 also measures what they think they'll be able to do differently as a result, how confident they are that they can do it, and how motivated they are to make changes.

Methods:

Field experience evaluation form

Intern Logbook.

Field experience student survey

Parameter
I have acquired the expected skills in my training
Generally, I am satisfied about the year of internship

Level 3: Behavior and results

This mainly to understand how well people apply their training. It is mainly to answer the question will the trainees put any of their learning to use in their future work? It can also reveal where people might need help and further training which can be allowed in the coming levels of the work experience and board programs. As students are graduated after the internship the feedback is mainly get from the graduates and employers

Method:

Alumni annual survey

Employers' satisfaction survey

Assessment Methods for program learning outcomes.	
Domains	
Knowledge	Essay questions MCQs Oral questions
Skills	OSPE OSCE Short case assessment and long case assessment Log book Assignments rubric Case presentation checklist
Values	OSCE Assignments rubric PBL checklist Continuous assessment (Indirect method: for the student communication skills, language abilities, considering responsibilities, respecting deadlines, and abilities to use the IT services) Short case assessment and long case assessment Case presentation checklist Group assignments PBL checklist Project checklist

Academic integrity values of the program

Definitions:

The program adopts the definition of The International Center for Academic Integrity as a ‘a commitment, even in the face of adversity, to six fundamental values: honesty, trust, fairness, respect, responsibility, and courage. Without them, everything that we do in our capacities as teachers, learners, and researchers loses value and becomes suspect.

Courage is the responsibility for upholding the values of integrity is simultaneously an individual duty and a shared concern. Every member of an academic community – each student, faculty member, and administrator – is responsible for safeguarding the integrity of its scholarship, teaching and research.

Research integrity can also be defined in terms of the credibility of its findings as ‘the trustworthiness of research due to the soundness of its methods and the honesty and accuracy of its presentation.

Academic misconduct or research misconduct generally refers to a breach of academic integrity. Cheating, plagiarism, and fabrication or falsification of data are examples of such breaches.

Program actions to keep the academic integrity:

- Code of ethics for staff members and Students which is approved and publicized to students and staff members which address allegations of misconduct
- Take action to mitigate foreseeable risks to academic and research integrity.
- The program is keen to provide students and staff with guidance and training on what constitutes academic or research misconduct and the development of good practices in maintaining academic and research integrity.

- The program ensures that integrity is maintained in all aspects of the process, including admissions, teaching, training, student assessment, the awarding of grades and approval for students to graduate with a qualification. Courses of study need to be of an appropriate level and volume of learning. All staff and students have obligations to uphold academic integrity.

Students demonstrate honesty by:

- following their instructor's guidelines and expectations for assignments and tests
- submitting original work and completing individual assessments independently

Students demonstrate trust by:

- being dependable and reliable in their work, commitments and actions
- following their instructor's directions and completing work by the set deadline

Students show respect by:

- consistently and accurately citing the work of others in their assignments
- keeping academic materials and instructor's intellectual property private (e.g., class slides, assignments, tests, etc.), and not sharing these without the instructor's permission

Students demonstrate fairness by:

- treating others equally without self-interest or prejudice
- following the University's rules and not trying to gain unfair advantages in assessments, mid-terms or tests (e.g., copying someone else's answers, using their phone to look up information during an exam etc.)

Students demonstrate responsibility by:

- completing their individual and group work to the best of their abilities and being accountable to themselves, their instructors, their classmates, and the University
- Seeking help If they are struggling or are not sure of expectations

Students demonstrate courage by: being brave and standing up for what is right, even in challenging situations. If they think someone has committed an academic offense or is violating a rule - they alert their instructor, Associate Dean, or a staff member

Moreover, academic integrity skills, like citing, paraphrasing, or summarizing, take practice, and students should ask for help along the way. The Office of Academic Integrity has a number of resources for students:

-

جامعة الحدود الشمالية
NORTHERN BORDER UNIVERSITY
كلية الطب

https://med-college.nbu.edu.sa/