

المعايير القومية الأكاديمية المرجعية

المرحلة الجامعية الأولى



Arab Republic of Egypt
National Authority for Quality
Assurance and Accreditation of Education



NATIONAL ACADEMIC REFERENCE STANDARDS

DENTISTRY

1st Edition
January 2009

National Academic Reference Standards (NARS)

Dentistry

January 2009

1st Edition

Table of Contents

Preface	5
Acknowledgements	9
Methodology	11
Introduction to Dentistry Education	13
National Academic Reference Standards	15
Curriculum Structure	21
Glossary	22
References	25

Preface

Based on the Presidential Decree number (82) for the year 2006, the National Authority for Quality Assurance and Accreditation of Education (NAQAAE) was founded to enhance the quality of education in Egypt.

In the light of NAQAAE's mandates, developing National Academic Reference Standards (NARS) for higher education comes on the top of its priorities. NARS are intended to set out clearly the graduate attributes and academic characteristics expected to be achieved in the academic programs of different disciplines.

The natural resources are no longer the backbone for development and prosperity; instead knowledge economy has become the main base for inducing tremendous and progressive breakthroughs in the resources of nations. In this regard, knowledge economy requires high quality education based on well defined reference standards.

The international changes and the concomitant alterations in the socio-economic conceptions obliged quality education as the main gate for human resources development. The latter, in turn, is counted as one of the most important determinants of national sustainable development.

Good practice in education should encourage students to improve their innovative and creative capabilities, employ appropriate technologies and pursue independent and life-long learning. This would necessitate setting out plans to develop the institutional capabilities and educational efficiency. Accordingly, educational institutions have to reform their programs and courses to meet the demands of the labor market. In addition, graduates should acquire the flexibility that enables them to adapt to the future needs of the labor market.

In alignment with its functions, NAQAAE, in collaboration with the stakeholders, has developed an integrated system to assure education quality. One of the system's outcomes is a series of guides for NARS in different academic disciplines to help higher education institutions in designing their programs to meet the accreditation requirements.

***National Authority for Quality
Assurance and Accreditation
of Education (NAQAAE)***

Acknowledgements

The National Authority for Quality Assurance in Education, (NAQAEE) would like to thank all the stakeholders involved in this work. The stakeholders included are representatives from the Ministry of Higher Education, National Syndicates, the Academic university staff members and the Private Sector. All of them were committed to make this work possible through their knowledge and experience.

The President of the National Authority for Quality Assurance in Education, Professor Magdy Kassem and Board members would like to acknowledge the efforts done by the task force group assigned to prepare this guideline for their hard work to ensure high quality graduates and to be comparable to the international standards.

Professor . Magdy A. Kassem
NAQAEE, President

Methodology

NAQAAE has invited a group of education experts, in different academic disciplines, from state, private and Al-Azhar Universities to develop a general framework of the guide for the national academic reference standards (NARS) in the different sectors of higher education. The steps proceeded as follows:

1. Brain Storming

The authority held several workshops for expert groups to discuss the general framework and elements/contents of the NARS guide and Standardization of concepts and terms used in the NARS within a definite time table.

2. Reviewing of the International Academic Standard

Experts groups have reviewed the academic standards of some World accreditation institutions and standard applied in the corresponding faculties at universities from different countries in the world to have access to the global level, taking into account the need to preserve the Egyptian identity.

3. Reviewing the Available Academic Standards in Egypt

The working groups have reviewed the academic standards which have been developed by the sectors of the Supreme Council of Universities - Ministry of Higher Education and Scientific Research. In accordance with the required amendments to NAQAAE, groups

developed the guidelines to meet the needs of higher education institutions.

4. Reviewing by Technical Committee

Standard first drafts were reviewed by technical committees formed by NAQAAE board, to insure that standards meet the agreed essential elements as well as the technical editing of the draft.

5. Stakeholders Approval

After the completion of the draft of national academic reference standards, it was presented to representatives from stakeholders, faculty members from different universities and Al-Azhar institutions and representatives from the Ministry of Higher Education and the State for Scientific Research, to take appropriate action.

6. Dissemination

The Authority posted academic standards on its website (naqaae.org.eg), to receive feedback from students, faculty members and stakeholders.

7. Endorsement of Standards

The draft was revised according to the feedback received and introduced to NAQAAE's Board for approval.

Introduction to Dentistry Education

Dentistry as a part of the healthcare profession is the science and art of prevention, detection, management and treatment of oro-facial and dental disease. It is mainly a clinical discipline with the ultimate goal of maintaining oral, dental and general health in individuals and in the society at large. Dentistry is based on the foundation of knowledge and understanding of basic and medical sciences including Physics, Chemistry, Bioscience, Human Anatomy, Growth and Genetics, Physiology, Biochemistry, Microbiology and Immunology, General Histology, Pharmacology, General Pathology, Internal medicine and General Surgery.

Faculties of Dentistry are required to emphasize the ethical practice and professionalism, high level of communication skills and competence in clinical and technical aspects of dentistry.

The educational environment should inspire students to maintain high professional and personal standards. Lifelong learning in a caring profession should be an integral part of the educational process. The educational environment should also encourage students to develop an analytical approach to theory and practice of dentistry and to stimulate critical thinking. It should also allow students to acquire research methods and skills in the collection, evaluation and presentation of evidence. This form of education provision should allow students to

develop an adaptable approach to the practice of dentistry to be able to respond effectively to the individual needs of patients and of the communities they will serve.

An important aspect of dental education should provide the students with a wide range of clinical skills; however, they are not expected to be highly skilled in all clinical procedures. The students should be encouraged to deliver dental care in a team approach concept.

Programs should exhibit a degree of flexibility to accommodate a changing pattern of dental and oral health needs in conformity with the national health policy.

A career in dentistry should not be limited by the fact that the new graduate is trained only as a practitioner. A wide range of careers exists within dentistry itself; presumably dental education nurtures diverse research activities that support dental professionals throughout their careers.

I. National Academic Reference Standards (NARS)

1. Attributes of the Graduates of Dental Medicine

The graduate must be able to:

- 1.1. Deliver independently oral health care services within the scope of general dentistry
- 1.2. Provide ethical professional practice including compassion, empathy, integrity, responsibility and tolerance.
- 1.3. Provide comprehensive practice management encompassing patient assessments, and maintain patient's records in complete and accurate forms.
- 1.4. Communicate effectively to develop a mature, sensitive and caring relationship with their patients.
- 1.5. Respond to socio-economic aspects of different communities and engage effectively in community services.
- 1.6. Maintain a safe and infection-controlled environment.
- 1.7. Realize the importance of lifelong learning and strive for continuous professional education.
- 1.8. Recognize the various features of medico-legal aspects of the dental profession.

- 1.9. Recognize the limitation of their current knowledge and clinical abilities and realize the need for proper referral.
- 1.10. Evaluate and respond to ongoing dental technology.

2. Knowledge and Understanding

Upon completion of an undergraduate dental program, the graduate must know and understand the biomedical, dental, and behavioral sciences that form the basis of human health and disease including:

- 2.1. The interrelationship between different systems of the human body.
- 2.2. The principles of pathogenic mechanisms and manifestations of human diseases which are of dental significance.
- 2.3. Basis and significance of oral health promotion, nutritional education and prevention of oral diseases in population based approaches.
- 2.4. Prevention and management of medical emergencies.
- 2.5. Maintenance of infection control and a safe working environment.
- 2.6. Basis of practice management.
- 2.7. Principles of evidence-based dentistry and its relation to scientific research.

- 2.8. Ethical and medico-legal aspects relevant to the practice of dentistry and research.
- 2.9. Social and psychological issues relevant to dental care with emphasis on behavioral management.

3. Practical and Clinical Skills

The graduate must be able to:

- 3.1. Establish a comprehensive patient's history, perform clinical examination, request and evaluate appropriate investigations.
- 3.2. Review the body systems and consult with other health care professionals, when required.
- 3.3. Detect abnormal and pathological conditions, as well as etiological and/or risk factors that may contribute to disease process.
- 3.4. Perform a range of clinical procedures which are within the scope of general dentistry, including:
 - 3.4.1. Applications of preventive procedures.
 - 3.4.2. Application of different local anesthetic techniques.
 - 3.4.3. Extraction of teeth and removal of roots when necessary.
 - 3.4.4. Diagnosis of commonly encountered oral lesions.

- 3.4.5. Performance of the necessary radiographs.
- 3.4.6. Performance of non-surgical periodontal treatment and monitor treatment outcomes.
- 3.4.7. Restoration of carious and non-carious tooth defects with emphasis on basic concepts of esthetics.
- 3.4.8. Basic endodontic procedures.
- 3.4.9. Rehabilitation of partially and completely edentulous patients.
- 3.4.10. Diagnosis and prevention of developing malocclusions.
- 3.4.11. Basic endodontic treatment.
- 3.5. Apply current infection control guidelines.
- 3.6. Control different levels of patient's anxiety and apprehension in different age groups.
- 3.7. Manage dental and medical emergencies which may occur in dental practice and perform basic life support measures.
- 3.8. Prescribe and monitor the effects of appropriate pharmaceutical agents taking into consideration drug and patient factors.

4. Intellectual Skills

The dental graduate must be able to:

- 4.1. Integrate basic biomedical, behavioral and dental sciences with signs, symptoms and physical findings of the disease.
- 4.2. Differentiate between normal and abnormal features that are particularly relevant to dental practice.
- 4.3. Identify, prioritize and generate a list of potential patient's clinical problems.
- 4.4. Analyze, interpret, and integrate collected diagnostic data to solve clinical problems based on current evidence.
- 4.5. Design appropriate treatment plans for different dental problems.
- 4.6. Assess and evaluate the effects of medications taken by the patient on dental management.
- 4.7. Reason deductively in clinical problem solving.

5. General and Transferable Skills

The graduate must be able to:

- 5.1. Work in collaboration as a member of an interdisciplinary team.
- 5.2. Communicate effectively in multicultural work environment using verbal and non-verbal means.
- 5.3. Recognize and effectively utilize all sources for continuing professional development and life-long learning.
- 5.4. Adopt a creative attitude in an ethical and scientific approach.
- 5.5. Self evaluate professional abilities, performance, and progress.
- 5.6. Recognize professional responsibility towards the surrounding community.
- 5.7. Use information technologies to enrich and diversify professional experience.
- 5.8. Recognize the basic concepts of quality assurance and practice management.
- 5.9. Prioritize workload and manage personal stress in the framework of proper performance and management.

II. Curriculum Structure

The percentages mentioned in the following table for each area of study are just a guide for the faculty and not obligatory to follow.

Table 1. Percentages of areas of study

Subjects	Range	Characterization
Basic sciences	28%-32%	*All basic sciences including basic medical and dental sciences.
Medical and Dental sciences A- Didactic B- Laboratory & clinical	21%-25% 33%-37%	**All dental and medical sciences.
Complementary sciences	5%-8%	Behavioral science Law, Ethics and Professionalism Information Technology
Subtotal		
• Discretionary subjects	6-8%	
Total	100%	

- Allowed to each faculty to use based on its mission

*Physics, Chemistry, Bioscience, Human Anatomy, Growth and Genetics, Physiology, Biochemistry, Microbiology and Immunology, General Histology, Pharmacology, General Pathology, Oral Biology, Dental Anatomy and Oral Physiology, Dental Biomaterials and Oral Pathology.

** Internal medicine, General surgery, Restorative Dentistry, prothodontics, Oral and maxillofacial Surgery and General Anesthesia, Diagnostic Sciences, Oral Medicine, Oral Maxillofacial Radiology, Periodontics, Endodontic, Orthodontics and Dentofacial Orthopedics, Pediatric Dentistry, Public Health and Community Dentistry

III. Glossary

1. Institution

A University, faculty or higher institute providing education programs leading to a first university degree or a higher degree (Master's or Doctorate).

2. Graduate Attributes

Competencies expected from the graduate based on the acquired knowledge and skills gained upon completion of a particular program.

3. National Academic Reference Standards (NARS)

Reference points designed by NAQAAE to outline / describe the expected minimum knowledge and skills necessary to fulfill the requirements of a program of study.

4. Academic Standards

Reference points prescribed (defined) by an institution comprising the collective knowledge and skills to be gained by the graduates of a particular program. The academic standards should surpass the NARS, and be approved by NAQAAE.

5. Subject Benchmark Statements

Guideline statements that detail (enumerate) what can be expected of a graduate in terms of the learning outcomes to satisfy the standards set for the program. They enable the outcomes to be compared, reviewed and evaluated against agreed upon standards.

6. The Program

A set of educational courses and activities designed by the institution to determine the systematic learning progress. The program also imparts the intended competencies required for the award of an academic degree.

7. Intended Learning Outcomes (ILOs)

Subject-specific knowledge, understanding and skills intended by the institution to be gained by the learners completing a particular educational activity. The ILOs emphasize what is expected that learners will be able to do as a result of a learning activity.

8. Knowledge and Understanding

Knowledge is the intended information to be gained from an educational activity including facts, terms, theories and basic concepts. Understanding involves

comprehending and grasping the meaning or the underlying explanation of scientific objects.

9. Intellectual Skills

Learning and cognitive capabilities that involve critical thinking and creativity. These include application, analysis, synthesis and evaluation of information.

10. Professional and Practical Skills

Application of specialized knowledge, training and proficiency in a subject or field to attain successful career development and personal advancement.

11. General and Transferable Skills

Skills that are not subject-specific and commonly needed in education, employment, life-long learning and self development. These skills include communication, team work, numeracy, independent learning, interpersonal relationship, and problem solving... etc.

IV. References

- Barrows HS, Tamblyn RM. Problem-based learning, an approach to medical education. New York: Springer Publishing Co.,1980.
- Guyatt G, Chairns J, Churchill D et al. Evidence-based medicine. A new approach to teaching the practice of medicine. A new approach to teaching the practice of medicine. JAMA 1992; 266: 2420-2425.
- Hendricson WD, Cohen PA. Future directions in dental school curriculum, teaching, and learning. In: Haden NK, Tedesco LT, eds. Leadership for the future: the dental school in the university. Washington, DC: American Association of Dental Schools, 1999.
- Kelly M, McCartan BE, Schmidt HG. Cognitive learning theory and its application in the dental curriculum. Eur J Dent Educ 1998; 3: 52-56.
- Lantz MS, Chaves JF. What should biomedical sciences education in dental schools achieve? J Dent Educ 1997;61: 426-433.
- Leahey TH, Harris RJ. Learning and Cognition, 4th edn. Englewood Cliffs, NJ: Prentice Hall, 1997.
- Whipp JL, Ferguson DJ, Wells LM, Iacopino AM. Rethinking knowledge and pedagogy in dental education. J Dent Educ 2000; 64 : 860-866.
- Yip H, Barnes I. Learning in dental education. Eur J Dent Educ 1997 : 1: 54-60.

مرحلة الدراسات العليا

I. Diploma Programs

1- Graduate Specifications/characteristics:

Diploma program graduate in any specialty should be able to:

1. Apply the specialized knowledge gained in his professional practices
2. Identify professional problems and suggest solutions to them
3. Master the professional skills and the use of appropriate technological means in his professional practices
4. Communicate and lead teams to work through systematic professional work
5. Make decisions in light of available information
6. Utilize available resources efficiently
7. Be aware of his role in community development and the preservation of the environment
8. Behave in a manner that reflects the commitment to integrity and credibility, and the rules of the profession and accept accountability and accounting
9. Be aware of the need to develop himself and to engage in continuous learning

2-General Standards:

2.1. KNOWLEDGE AND UNDERSTANDING:

By the end of the diploma program graduates must be able to understand and accommodate the following :

2.1.1. Theories, fundamentals and specialized knowledge in the field of the study as well as sciences relevant to his professional practice

2.1.2. Legal and ethical principles for professional practice in the field of specialization

2.1.3. The principles and fundamentals of quality in the professional practice in the field of specialization

2.1.4. The impact of the professional practice on the environment and the work to preserve and maintain the environment

2.2. MENTAL / COGNITIVE SKILLS:

By the end of the diploma's program graduates must be capable of:

2.2.1. Identifying and analyzing the problems in the area of specialization and arranging them according to their priorities

2.2.2. Solving problems in the field of specialization

2.2.3. Analytical reading of research and topics related to the specialization

2.2.4. Risk assessment in the professional practice

2.2.5. Professional decision-making in the light of available information

2.3. PROFESSIONAL SKILLS:

By the end of the diploma's program graduates must be able to:

2.3.1. Apply professional skills in the area of specialization

2.3.2. Write professional reports

2.4. GENERAL AND TRANSITIONAL SKILLS:

By the end of the diploma's program graduates must be capable of:

2.4.1. Effective communication in its different forms

2.4.2. The use of information technology to serve the development of professional practice

2.4.3. Self-assessment and to identify personal learning needs

2.4.4. The use of different sources for information and knowledge

2.4.5. Working in a team and time management

team leadership in familiar professional contexts

2.4.6. Self- and continuous-learning

II. Master Programs

1- Graduate Specifications/characteristics:

Master program graduate (of any specialty) should be able to:

1. Master the fundamentals and methodologies of scientific research and use its different tools.
2. Apply the analytical approach in the field of specialization.
3. The application of specialized knowledge, and integrate with the knowledge of the relationship in the professional practice.
4. Show awareness of the ongoing problems and visions in the modern area of specialization.
5. Identify the problems of profession and find appropriate solutions.
6. Perfecting /Mastering the scope of appropriate professional skills, and the use of appropriate technological means to serve the professional practice.
7. Communicate effectively and the ability to lead teams.
8. Decision-making in the contexts of various professional issues.
9. Management of available resources to bring the greatest benefit and its preservation.

10. Show awareness of his role in the development of society and preserving the environment in the light of global and regional changes.

11. Act in a way that reflects commitment to integrity and credibility, and commitment to the rules of the profession.

12. Self development academically and professionally and continuing education.

2-General Standards:

2.1. KNOWLEDGE AND UNDERSTANDING:

By the end of the master's program graduates must have the understanding and awareness of the following:

2.1.1. Theories and fundamentals related to the field of learning, as well as in related areas.

2.1.2. Mutual influence between professional practice and its impacts on the environment.

2.1.3. Scientific developments in the field of specialization.

2.1.4. Ethical and legal principles of professional practice in the field of specialization.

2.1.5. The principles and fundamentals of quality in professional practice in the field of specialization.

2.1.6. Fundamentals and ethics of scientific research.

2.2. MENTAL / COGNITIVE SKILLS:

By the end of the master's program graduates must be able to:

2.2.1. Analysis and evaluation of information in the field of specialization and analogies to solve problems.

2.2.2. Specialized problem-solving with the unavailability of some data.

2.2.3. Link between different knowledge to solve the professional problems.

2.2.4. Make research study or write a scientific study with methodology on a research problem.

2.2.5. Risk assessment in the professional practices in the field of specialization.

2.2.6. Planning to improve performance in the field of specialization.

2.2.7. Professional Decision-making in diverse professional contexts.

2.3. PROFESSIONAL SKILLS:

By the end of the master's program graduates must be able to:

2.3.1. Mastering basic and modern professional skills in the area of specialization.

2.3.2. Writing and evaluation of professional reports.

2.3.3. Assessment of existing methods and tools in the field of specialization.

2.4. GENERAL AND TRANSITIONAL SKILLS:

By the end of the master's program graduates must be able to:

2.4.1. Effective communication in different ways.

2.4.2. The use of information technology to serve the professional practice.

2.4.3. Self-assessment and determine the different learning needs.

2.4.3. The use of different sources for information and knowledge.

2.4.5. Development of rules and indicators for assessing the performance of others.

2.4.6. Work in a team, and lead teams in various professional contexts.

2.4.7. Manage time efficiently.

2.4.8. Continuous self-learning.

III. Doctoral programs

1- Graduate Specifications/characteristics:

Doctoral program graduate (of any specialty) should be capable of:

1. Mastering the basics and methodologies of scientific research
2. Continued work to add to the knowledge in the field of specialization
3. The application of an analytical and criticizing review of the knowledge in the field of specialization and related areas
4. Integration of specialized knowledge with relevant fields of knowledge to derive and develop relationships among them
5. Showing deep awareness of the ongoing problems and theories in the field of specialization
6. Identifying professional problems and finding innovative solutions for them
7. Mastery of a wide range of professional skills in the field of specialization
8. Orientation towards the development of new methods, tools and techniques of professional practice
9. Use of appropriate technological means to serve the professional practice
10. Communicating effectively and leading of teams in the different professional contexts
11. Decision-making in light of available information
12. Employment of available resources efficiently, their development and working on finding new resources
13. Awareness of his role in community development and preservation of

the environment

14. Behaving in a manner that reflects the commitment to integrity, credibility and the rules of the profession

15. Commitment to continuing self-development and transfer of knowledge and expertise to others

2-General Standards:

2.1. KNOWLEDGE AND UNDERSTANDING:

By the end of the doctoral program graduates must have the understanding and awareness of the following:

2.1.1. Theories, fundamentals and modern knowledge in the field of specialization as well as in related fields

2.1.2. Basics, methodologies and the ethics of scientific research and its different tools

2.1.3. Legal and ethical principles for professional practice in the field of specialization

2.1.4. Principles and fundamentals of quality in professional practice in the field of specialization

2.1.5. Knowledge on the effects of professional practice on the environment and ways of development and maintenance of the environment

2.2. MENTAL / COGNITIVE SKILLS:

By the end of the doctoral program graduates must be capable of:

- 2.2.1. Analysis and evaluation of information in the field of specialization and the measurement and extraction based on it
- 2.2.2. Solving of specialized problems based on the data available
- 2.2.3. Conducting research studies that add to the existing knowledge
- 2.2.4. Formulation of scientific papers
- 2.2.5. Risk assessment in professional practice
- 2.2.6. Planning for the development of performance in the area of specialization
- 2.2.7. Professional decision-making in the different professional contexts
- 2.2.8. Innovation / Creativity
- 2.2.9. Dialogue and debate based on evidence

2.3. PROFESSIONAL SKILLS:

By the end of the doctoral program graduates must be capable of:

- 2.3.1. Mastery of basic and modern professional skills in the field of specialization
- 2.3.2. Writing and evaluation of professional reports
- 2.3.3. Evaluation and development of methods and tools existing in the area of specialization

2.3.4.The use of technological means to serve the professional practice

2.3.5. Planning for the development of professional practice and
development of the performance of others

2.4. GENERAL AND TRANSITIONAL SKILLS:

**By the end of the doctoral program graduates must be capable
of:**

2.4.1. Effective communication in its different forms

2.4.2. Use of information technology to serve the development of
professional practice

2.4.3.To teach others and evaluate their performance

2.4.4.Self-evaluation and continuous learning

2.4.5.Use of different sources to acquire information and knowledge

2.4.6.Working in a team and leading teams

2.4.7. Management of scientific meetings and the ability to manage time