جامعة قناة السويس
كلية العلوم
وحدة ضمان الجودة
قسم الرياضيات

المعايير الأكاديمية لبرنامج الرياضيات

كلية العلوم بالإسماعيلية

2023/2022

إلى ابنائنا طلاب مرحلة البكالوريوس
والزملاء أعضاء هيئة التدريس

رئيس قسم الرياضيات
ورئيس مجلس ادارة برنامج الرياضيات
أ.د/ مدحت أحمد رخا

منسق برنامج الرياضيات
د/ سوزان على محمد

مدير وحدة الجودة بالقسم
د/ سوزان على محمد

منسق معيار المعايير الأكاديمية بالبرنامج
د/ أمل سيد محمد

General Attributes of the Graduates

The graduates must be able to:

- Recognize the role of mathematics in the development of society.
- Develop scientific approaches that meet community needs considering economic, environmental, social, ethical, and safety requirements.
- Utilize scientific facts and theories to analyze and interpret practical data.
- Collect, analyze, and present data using appropriate formats and techniques.
- Postulate concepts and choose appropriate solutions to solve problems on scientific basis.
- Apply effectively information technology relevant to mathematics.
- Participate effectively in a multidisciplinary teamwork and be flexible for adaptation, decision making and working under contradictory conditions as well as exhibiting the sense of beauty and neatness.
- Adopt self and long life-learning and participate effectively in research activities.
- Deal with scientific data in Arabic and English.
- Understand, recognize, and describe patterns and make abstractions about them.
- Draw conclusions about the real world using mathematical concepts.
- Find true statements that can be made about mathematical objects.
- Apply techniques, tools, and formulas to understand an object's attributes.
- Recognize and use various types of reasoning and methods of proof.
- Create and use representations to model and interpret mathematical ideas.
- Recognize and understand how mathematical ideas interconnect and build on one another.
- Recognize distance education and hybrid learning programs and systems for managing distant electronic meetings.
- Use efficiently electronic systems that support digital transformation including hybrid learning and distant electronic meetings.

Professional and practical skills

The graduates must be able to:

- Plan, design, process and report on the investigated data, using appropriate techniques and considering scientific guidance.
- Apply techniques and tools considering scientific ethics.
- Solve problems using a range of formats and approaches.
- Identify and criticize the different methods used in addressing subject related issues.
- Apply reasoning techniques to build convincing mathematical arguments.
- Develop conjectures and draw appropriate conclusions, and test these conjectures.
- Identify required mathematics and other technical information independently.
- Use technology to enhance mathematical thinking and understanding.
- Conduct independent nontrivial exploration in mathematics.
- Develop and reinforce tenacity and confidence in their abilities to use mathematics

General and transferable skills

The graduates must be able to:

- Use information and communication Technology effectively.
- Identify roles and responsibilities, and their performing manner.
- Think independently, set tasks and solve problems on scientific basis.
- Work in groups effectively; manage time, collaborate & communicate with others.
- Consider community linked problems, ethics and traditions.
- Acquire self- and long life–learning.
- Apply scientific models, systems, and tools effectively.
- Deal with scientific patents considering property right.

Intellectual skills:

The graduates must be able to:

- Differentiate between subject-related theories and assess their concepts and principles.
- Analyze, synthesize, assess and interpret qualitatively and quantitatively science relevant data.
- Develop lines of argument and appropriate judgments in accordance with scientific theories and concepts.
- Postulate and deduce mechanisms and procedures to handle scientific problems.
- Construct several related and integrated information to confirm, make evidence and test hypotheses.
- Formulate mathematical ideas and procedures using appropriate mathematical vocabulary and notation.
- Construct symbolic forms of problem situations through modeling real-world situations, develop and use the models to make predictions and informed decisions.
- Recognize, compare, and transform mathematical objects.
- Represent, abstract and interpret problems.
- Develop connections within branches of mathematics and between mathematics and other disciplines.
- Utilize appropriate processes in applied mathematical studies.
- Judge the validity of mathematical arguments and the reasonableness of results.

Knowledge and understanding

Graduates must acquire knowledge and understanding of:

- Facts, concepts, principles and techniques related to Mathematics.
- The relevant theories and their applications.
- The processes and mechanisms supporting the structure and function of the specific topics.
- The theories and methods applied for interpreting and analyzing data related to mathematics.
- The developmental progress of the program-related knowledge.
- The relation between the studied topics and the environment.
- Numerical mathematics, and the different ways in which numerical information is used.
- Abstract algebraic structures and their roles in solving problems expressed with symbols and in developing mathematical theories and techniques.
- Mathematical methods and techniques that deal with differential equations and their applications.
- Geometrical concepts, and processes used in measuring attributes of objects.
- The concept of function, and its role in mathematical analysis.
- Discrete mathematics, algorithms, and combinatorial abilities in order to solve problems of finite character and enumerate sets without direct counting.
- Probability and statistical models to make inferences about real-world situations.
- Modeling and symbolic representations of problem situations.
- The deductive nature of mathematics, and the roles of definitions, axioms, and theorems to identify and construct valid deductive arguments.
- Theories and applications of other mathematical trends and/or applied mathematics and/or mathematical statistical and/or computer science.

يسعى برنامج الرياضيات بقسم الرياضيات بكلية العلوم جامعة قناة السويس إلى أن يضع المعايير الأكاديمية القياسية الخاصة بمرحلة البكالوريوس متسقة مع المعايير القياسية القومية **(NARS)** المعلنة من الهيئة القومية لضمان جودة التعليم والأعتماد بما يضمن إستيفاء الخريج للمواصفات التى يتطلبها سوق العمل، وأن يرتقى بتلك المعايير بما يحقق تميز البرنامج ودعم تنافسيته، وتتوافق هذه المعايير مع رسالة البرنامج وأهدافه الأستراتيجية.

المعايير الأكاديمية المرجعية الوطنية
National Academic Reference Standards (NARS)

هى مجموعة من المعايير التي وضعتها لجان متخصصة بمشاركة أصحاب المصلحة والمستفيدين الآخرين مع الأخذ فى الإعتبار المعايير الدولية والحفاظ على خصوصية الثقافية للأمة و هذه تمثل أساس تصميم البرامج التعليمية.

The attributes السمات

مجموعة من الخصائص المتوقعة من الخريجين، والتى تستفيد من الحصول منها علي المعرفة والفهم والمهارات الضرورية للعمل و / أو مواصلة التعليم والبحوث الأكاديمية على مستوى مناسب في المجال ذي الصلة.

مخرجات التعلم
Intended learning outcomes

هي المعرفة والفهم والمهارات التي تعتزم المؤسسة تقديمها فى برامجها التعليمية والتى تعكس رؤية ورسالة المؤسسة وتعكس استخدام معايير مرجعية خارجية على مستوى مناسب.