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5. Mathematics Department Online
Welcome to the Department of Basic Sciences and Mathematics. We hope your stay as a Mathematics major at Philadelphia University will be an enjoyable and fruitful academic experience. In this handbook you will find all the important general information you need to guide you through our department and the Mathematics Bachelor's degree program. This handbook has been carefully prepared for you, keeping in mind that familiarity with our system is necessary for smooth sailing through our program.

It is recommended as well that you read the University Student's Guide, which contains a more detailed rules and regulations for all Philadelphia University students. Handbooks issued by the various departments are all governed by the rules and regulations stated therein and are meant to supplement, not supplant, it. Throughout this handbook we therefore will refer the reader to the University Student's Guide when the needed information is not specific to the Department.

A soft copy of this handbook may also be downloaded from the Internet using the address http://www.philadelphia.edu.jo/math/program/handbook.pdf

1.1 Admission

Admission criteria are issued by the Ministry of Higher Education, which governs all private universities. A minimum average of 55% in the Tawjihi Examination (or equivalent) is required for admission into any private university in Jordan.

First year students will be given a full timetable for the introductory activities, and registration must be completed in accordance with times specified therein. Returning students must also register during that week.

Students are advised to check the online academic calendar at University's webpage at http://www.philadelphia.edu.jo/arabic/event.asp

1.2 Entrance into the Mathematics Program

In addition to the above, the Department requires prospective students to have completed high school Calculus and College Algebra, or their equivalent in order to be admitted into the program. A separate admission test may also be given by the Department's Admission Committee if a student does not come from a nationally accredited academic institution.

All students registered in the Mathematics program at Philadelphia University will be required to maintain a grade point average of at least 60% at the beginning of the fifth semester in order to be retained in the major. We follow the University's regulations concerning students' academic probation, warning, and dismissal from the program, as given in the University Student's Guide.

1.3 Brief History of the Department
The Department of Basic Sciences is one of the two departments in the Faculty of Science, the other being the Biotechnology and Genetic Engineering Department. From the beginning we have been offering service basic science courses such as Mathematics, Physics, and Chemistry to students from other Faculties. (Biology is now offered through the Biotechnology Department.) In 2003, however, a Bachelor's degree program in Mathematics was established. To reflect this addition, the department is now officially called the Department of Basic Sciences and Mathematics.

Our department currently employs twelve full-time faculty members, eleven of whom hold Doctorate degrees from various backgrounds in Mathematics, Physics, and Chemistry. While continuing to serve other faculties, we also strive to improve the quality of teaching and research and to expand as an independent department in fields of science we cover. Since our program is relatively new, the number of our students is still small. This gives the advantage of a very high teacher-to-student ratio.
Mathematics is not only a fascinating subject of great intrinsic beauty, its wide applicability to the natural and social sciences is also universally recognized. The Mathematics program offers a four-year Bachelor of Science degree which is fully accredited with the Ministry of Higher Education. Our curriculum emphasizes the development of analytical skills and independent thinking, which are vital in an ever-changing world.

Ours is a strong program designed to make Mathematics both a strong discipline and fun. We integrate classroom technology into traditional and modern teaching methods. Our curriculum is slightly oriented toward producing well-trained Mathematics teachers. However, it will also accommodate those who wish to pursue graduate studies and/or other careers in the job market. Our teaching staff are well qualified in their fields in both Pure and Applied Mathematics. These include Algebra, Analysis, Dynamical Systems, Mathematical Education, Mathematical Physics, Number Theory, Optimization Techniques, Statistics, and Topology.

2.1 Why Major in Mathematics?

Mathematics has commonly been recognized as the queen of science. But in addition to its role as a mere language and foundation of scientific studies and computing, Mathematics has now found an increasingly significant place in many diverse fields, from management to medicine and from government to psychology. An undergraduate degree in Mathematics will open the way to a future filled with wide opportunities for jobs and professions. More and more, government positions require skills involving the direct use of mathematics. In addition, mathematics professionals such as actuaries, accountants, and statisticians are quite high in demand worldwide.

A major in Mathematics, furthermore, will make the person literate and knowledgeable in many fields by way of intellectual discipline. This alone will enable the person to make a positive contribution to society. It also prepares those who wish to pursue an advanced degree in related fields like statistics, actuarial science, cryptography, or mathematical modeling.

Apart from preparing the students for future jobs, the goals of an education in mathematics include learning to

- calculate, manipulate, and solve problems
- read, read and think critically
- write with clear logic and prove, defend, and explain ideas
- think abstractly and creatively
- formulate and test hypotheses
- construct mathematical proofs and arguments
- appreciate the beauty, power, and preciseness of mathematics

2.2 Career Opportunities for a Mathematics Graduate
A graduate in Mathematics can go for a teaching career, which is indeed both challenging and rewarding, or else they can easily fit into an advanced study in almost any related field, whether basic or social sciences. Outside the educational institution, a graduate with a Mathematics degree can find a job as

- an actuarial scientist
- a statistical analyst
- an accountant
- a cryptanalyst
- a defense and security analyst
- a government employee in a variety of positions

2.3 Curriculum and Study System

An academic year is comprised of two compulsory semesters and an optional summer session:

- **Fall Semester:** from October to January
- **Spring Semester:** from February to June
- **Summer Session:** from July to August (optional)

The university follows the credit-hour system. A total of 132 credit hours is needed for the Bachelor of Science Degree. The maximum study load is 18 credit hours for the Fall and Spring Semesters and 9 credit hours for the Summer Session.

The 132 credit hours are distributed as follows.

(I) **University Requirements:** 24 Credit Hours

1. University Compulsory
   - 21 credit hours for Jordanians
   - 15 credit hours for Non-Jordanians

<table>
<thead>
<tr>
<th>Course #</th>
<th>Course Name</th>
<th>Credit</th>
<th>Prerequisite</th>
</tr>
</thead>
<tbody>
<tr>
<td>110103</td>
<td>Arabic Language Skills (1)</td>
<td>3</td>
<td>----</td>
</tr>
<tr>
<td>111100</td>
<td>Military Science *</td>
<td>3</td>
<td>----</td>
</tr>
<tr>
<td>111133</td>
<td>Human Thought &amp; Civilization (1)</td>
<td>3</td>
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</tr>
<tr>
<td>130101</td>
<td>English Language Skills (1)</td>
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<td>----</td>
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<tr>
<td>130102</td>
<td>English Language Skills (2)</td>
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<td>130101</td>
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<tr>
<td>710101</td>
<td>Computer Skills (1)</td>
<td>3</td>
<td>----</td>
</tr>
<tr>
<td>111101</td>
<td>Civic Education *</td>
<td>3</td>
<td>----</td>
</tr>
</tbody>
</table>

   * Optional for non-Jordanians.

2. University Electives
   - 3 credit hours for Jordanians
   - 9 credit hours for Non-Jordanians

<table>
<thead>
<tr>
<th>Course #</th>
<th>Course Name</th>
<th>Credit</th>
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<td>Arabic Language Skills (2)</td>
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<td>110101</td>
</tr>
<tr>
<td>111111</td>
<td>Introduction to Sociology</td>
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<tr>
<td>111112</td>
<td>Introduction to Psychology</td>
<td>3</td>
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</tr>
<tr>
<td>111113</td>
<td>Principles of Logic</td>
<td>3</td>
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<td>111121</td>
<td>Issues in Contemporary Thought</td>
<td>3</td>
<td>----</td>
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<tr>
<td>111135</td>
<td>Human Thought &amp; Civilization (2)</td>
<td>3</td>
<td>----</td>
</tr>
<tr>
<td>111142</td>
<td>Communication and Society</td>
<td>3</td>
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</tr>
<tr>
<td>Course Code</td>
<td>Course Title</td>
<td>Credits</td>
<td>Remarks</td>
</tr>
<tr>
<td>-------------</td>
<td>-------------------------------------------------</td>
<td>---------</td>
<td>---------</td>
</tr>
<tr>
<td>111153</td>
<td>Science &amp; Society</td>
<td>3</td>
<td></td>
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<tr>
<td>140103</td>
<td>Foreign Language (French 1)</td>
<td>3</td>
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<tr>
<td>140104</td>
<td>Foreign Language (Italian 1)</td>
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<tr>
<td>140106</td>
<td>Foreign Language (Hebrew 1)</td>
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<td>210121</td>
<td>History of Science</td>
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<tr>
<td>240151</td>
<td>Man and the Environment</td>
<td>3</td>
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<td>240141</td>
<td>Principles of Nutrition</td>
<td>3</td>
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<td>330101</td>
<td>Introduction to Administration</td>
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<td>340101</td>
<td>Principles of Macro Economics</td>
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<td>530100</td>
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<td>620105</td>
<td>Automobile Essentials</td>
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* Military Science is compulsory for Jordanian students and elective for non-Jordanian students

(II) Faculty Requirements: 18 Credit Hours

<table>
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<th>Course Code</th>
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<th>Credits</th>
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<td>210101</td>
<td>Calculus (1)</td>
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</tr>
<tr>
<td>210231</td>
<td>Introduction to Probability &amp; Statistics</td>
<td>3</td>
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<tr>
<td>240101</td>
<td>General Biology (1)</td>
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<tr>
<td>210122</td>
<td>Fundamentals of Scientific Knowledge</td>
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<td>710104</td>
<td>Computer Skills 2 for Science Faculties</td>
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<td>710101</td>
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</table>

(III) Major Requirements: 90 Credit Hours

1. Compulsory Courses: 66 Credit Hours

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
<th>Remarks</th>
</tr>
</thead>
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<td>Calculus (2)</td>
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<tr>
<td>250151</td>
<td>Discrete Mathematics</td>
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<tr>
<td>250201</td>
<td>Intermediate Analysis (1)</td>
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<tr>
<td>250203</td>
<td>Ordinary Differential Equations</td>
<td>3</td>
<td>250201</td>
</tr>
<tr>
<td>250232</td>
<td>Probability Theory</td>
<td>3</td>
<td></td>
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<tr>
<td>250241</td>
<td>Linear Algebra (1)</td>
<td>3</td>
<td>210101</td>
</tr>
<tr>
<td>250251</td>
<td>Set Theory</td>
<td>3</td>
<td>250102</td>
</tr>
<tr>
<td>250261</td>
<td>Modern Euclidean Geometry</td>
<td>3</td>
<td>250251</td>
</tr>
<tr>
<td>250305</td>
<td>Partial Differential Equations</td>
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<td>250203</td>
</tr>
<tr>
<td>250311</td>
<td>Real Analysis (1)</td>
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<td>250251</td>
</tr>
<tr>
<td>250312</td>
<td>Complex Analysis</td>
<td>3</td>
<td>250311</td>
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<tr>
<td>250313</td>
<td>Number Theory</td>
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<td>Mathematical Statistics</td>
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<tr>
<td>250341</td>
<td>Linear Algebra (2)</td>
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<tr>
<td>250342</td>
<td>Abstract Algebra (1)</td>
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<td>250371</td>
<td>Numerical Analysis</td>
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<td>250372</td>
<td>Computer-Aided Mathematics</td>
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<tr>
<td>250411</td>
<td>Real Analysis (2)</td>
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<tr>
<td>250442</td>
<td>Abstract Algebra (2)</td>
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<tr>
<td>250461</td>
<td>Topology</td>
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<td>250311</td>
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<tr>
<td>250471</td>
<td>Mathematical Modeling</td>
<td>3</td>
<td>250102</td>
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<tr>
<td>280472</td>
<td>Computational Number Theory</td>
<td>3</td>
<td>710102</td>
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</table>
2. Supplementary Courses: 12 Credit Hours

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>211104</td>
<td>Applied Physics</td>
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</tr>
<tr>
<td>210381</td>
<td>Problem Solving</td>
<td>3</td>
</tr>
<tr>
<td>210481</td>
<td>Instructional Strategies for Teaching Mathematics</td>
<td>3</td>
</tr>
<tr>
<td>210482</td>
<td>Pedagogy of Mathematics</td>
<td>3</td>
</tr>
</tbody>
</table>

* Student must have passed 60 credit hours
** Student must have passed 90 credit hours

3. Elective Courses: 12 Credit Hours from the following list

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Hours</th>
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</thead>
<tbody>
<tr>
<td>210331</td>
<td>Design of Experiment</td>
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<tr>
<td>210332</td>
<td>Applied Probability</td>
<td>3</td>
</tr>
<tr>
<td>211316</td>
<td>Computational Physics</td>
<td>3</td>
</tr>
<tr>
<td>250321</td>
<td>History of Mathematics</td>
<td>3</td>
</tr>
<tr>
<td>250351</td>
<td>Graph Theory</td>
<td>3</td>
</tr>
<tr>
<td>250383</td>
<td>Psychology of Learning &amp; Learning Theories</td>
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</tr>
<tr>
<td>250412</td>
<td>Functional Analysis</td>
<td>3</td>
</tr>
<tr>
<td>250451</td>
<td>Mathematics Philosophy</td>
<td>3</td>
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<tr>
<td>250462</td>
<td>Algebraic Topology</td>
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</tr>
<tr>
<td>250473</td>
<td>Advanced Applied Mathematics</td>
<td>3</td>
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<tr>
<td>250474</td>
<td>Control Theory</td>
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<tr>
<td>250476</td>
<td>Game Theory</td>
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<tr>
<td>250491</td>
<td>Seminar</td>
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</tr>
<tr>
<td>250492</td>
<td>Special Topics</td>
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</table>

* Subject to departmental approval

2.4 Short Course Descriptions

A brief course description for each of the Mathematics courses is given below. A complete list of textbooks and references for all these courses can also be downloaded from the Internet at the address [http://www.philadelphia.edu.jo/math/syllabi/textbooks.pdf](http://www.philadelphia.edu.jo/math/syllabi/textbooks.pdf)

- 100 level

**210101 Calculus I**
An introduction to analytic geometry, differentiation of algebraic and transcendental functions, applications of differentiation, and a brief introduction to integration.

**250102 Calculus II**
Techniques of integration, Conic sections, Polar coordinates, Intermediate forms, Improper integrals, Vectors, Sequences, Infinite series, Convergence tests, Taylor series representations. Prerequisite: 210101

**250151 Discrete Mathematics**

- 200 level
210231 Introduction to Probability and Statistics
This is an introductory course in statistics. The course is planned so that students learn the basic concepts needed in probability theory and statistics. It familiarizes students with statistical terms such as population, sample, sample size, random variable, mean, variance, and much more. The course covers materials such as collecting data, graphical methods, descriptive statistics, regression and correlation, probability basics, confidence intervals and hypothesis testing.

210235 Biostatistics
This course provides a practical introduction to statistical methods used in a variety of disciplines, such as health sciences, pharmacology, and nursing. All concepts introduced in the course are illustrated with examples that demonstrate principles. Materials covered are Picturing Distributions With Graphs, Numerical Summaries, The Normal Distribution, Standard Normal Distribution, Correlation and Regression, The Sampling Distribution of The Mean, Confidence Intervals, and Test of Hypotheses for the Mean.

250201 Intermediate Analysis
Multidimensional analytic geometry, functions of several variables, vector-valued functions, partial derivatives, gradient, maxima-minima problems and applications, double and triple integrals; potential fields; flux; Green's divergence and Stokes' theorems. Prerequisite: 250102

250203 Ordinary Differential Equations
First and second-order equations; numerical methods; special functions; Laplace transform solutions; higher order equations. Prerequisite: 250201

250232 Probability Theory
This course provides a practical introduction to probability theory. The materials covered in this course represent the cornerstone of much of what will be needed in statistical inference in the future. All concepts introduced in the course are illustrated with examples that demonstrate principles. The course covers materials such as Counting Techniques, Probability Axioms, Discrete and Continuous Random Variables, The Moment Generating Function, The Bivariate Distribution, Joint, Marginal, and Conditional Distributions, Independence, Correlation and Covariance.

250241 Linear Algebra I
Vector spaces, matrices, determinants, Linear transformations, Gauss Jordan elimination, eigenvalues and eigenvectors, theory and applications. Prerequisite: 210101

250251 Set Theory
Logic and proofs, Sets, set operations, cardinal numbers, finite sets, orders, axiomatic set theory, well-ordering, cardinals and ordinals, the axiom of choice. Prerequisite: 250102

250261 Modern Euclidean Geometry
Axioms of Euclidean geometries, isomorphisms and models, Finite geometry, Neutral geometry, equivalence of the parallel postulate, hyperbolic geometry. Projective geometry. Prerequisite: 250251

210331 Design of Experiments (Elective Course)
This course is designed to introduce the student to the basic ideas of experimental design and accompanying analysis. It also enriches student's knowledge and understanding of the statistical methods as it pertains to the design and analysis of experiments. Emphasis will be on conceptual understanding and application to practical problems. Students completing the course are expected to be knowledgeable in the basic experimental designs. Materials covered in the course include Introduction to Statistics and Data Analysis, Inferential Data Analysis for Simple Experiments, One Factor Designs, One Factor Blocking Designs, Latin Square Designs, Two- and General Factor
Factorial Experimental Designs, 2K Factorial Designs. Prerequisite: 210232

**210332 Applied Probability (Elective Course)**
Spaces, discrete and continuous random variables, transformations, expectations, generating functions, conditional distributions, law of large numbers, central limit theorems. Prerequisite: 210231

**250305 Partial Differential Equations**
Partial differential equations, orthogonal functions, Sturm-Liouville boundary value problems, Green's functions, variational methods, and other topics. Prerequisite: 250203

**250311 Real Analysis I**
Analytical study on real variable, basic topology, metric spaces, sequence and series, power series, limit, derivatives, integrations, the Riemann Stieltjes Integral. Prerequisite: 250151

**250312 Complex Analysis**
Functions of one complex variable, limits, derivatives, analytic functions, integrations, contour integrals, Cauchy's Theorem, Fundamental Theorem of Algebra, Power Series, Convergence, Residues and Poles. Prerequisite: 250311

**250313 Number Theory**
Studies of the integers: divisibility, prime numbers, the Fundamental Theorem of Arithmetic, the theory of congruences and applications, primitive roots and applications, quadratic reciprocity, and selected cryptographical applications. Prerequisite: 250102

**250321 History of Mathematics (Elective course)**
An overview of different subjects of mathematics from the historical point of view. Topics may vary. Origin of numbers, the ancient Orient, works of Socrates, Euclid, Archimedes, Islamic period, western Europe, transition to modern mathematics, discovery of Calculus, development of algebra, geometry, probability, selected topics.

**250332 Mathematical Statistics**
This is an introductory course in mathematical statistics. Topics will include Functions of Random Variables, Sums of Random Variables, Order Statistics, Point Estimators and Their Properties, Confidence Intervals and Test of Hypotheses. Prerequisite: 250232

**250341 Linear Algebra II**
An advanced study of linear algebra: vector spaces, subspace, linear independence, bases, linear transformation, determinants, eigenvalues, diagonalization, inner product space, linear operator, selected topics on canonical form. Prerequisite: 250241

**250342 Abstract Algebra I**
Studies in the theory of groups, cyclic groups, isomorphism theorems, the fundamental theorem of finite abelian groups, symmetry groups, Sylow theorems or other selected topics. Prerequisite: 250251

**250351 Graph Theory (Elective Course)**
Studies in graph theory, Eulerian circuits, trees, shortest path problem, matchings, graph coloring, planar graph, Hamiltonian cycles, matrical representations, digraphs, various applications and algorithms. Prerequisite: 250251

**250371 Numerical Analysis**
Techniques of numerical solutions to various mathematical problems, solutions of equations, Newton's method, zeros of polynomials, interpolations, numerical differentiations and integrations, numerical differential equations, initial value problems, systems of linear equations, matrix inverse, determinants, and eigenvalues. Prerequisite: 250241, 250203
250372 **Computer Aided Mathematics**  
Symbolic computational packages and scientific visualization through examples from calculus and geometry. Prerequisite: department agreement

250381 **Problem Solving**  
Concepts in problem solving; practice in solving a wide variety of mathematical and logical problems; techniques for attacking problems; building mathematical models. Prerequisite: 60 credit hours

250383 **Psychology of Learning and Learning Theories** *(Elective Course)*  
- 400 level

250411 **Real Analysis II**  
Continuation of 250311, series of functions, uniform convergence, the Stone Weierstrass theorem, the exponential function, algorithmic function, Fourier series, differential forms, vector analysis, Lesbegue measure. Prerequisite: 250311

250412 **Functional Analysis** *(Elective Course)*  
Compact operators and Fredholm theory, Banach algebras, harmonic analysis, differential equations, nonlinear functional analysis, and Riemann surfaces. Prerequisite: 250311

250442 **Abstract Algebra II**  
Studies in rings and fields, ideals, integral domains, rings of polynomials, vector spaces, extension fields, Galois theory, finite fields or selected applications. Prerequisite: 250342

250451 **Philosophy of Mathematics** *(Elective Course)*  
Selected topics from philosophy of mathematics and historical point of view.

250461 **Topology**  
Point-set metric spaces, topological spaces, product spaces, identification spaces, compactness and connectedness, countability, separation axioms, complete metric spaces. Prerequisite: 250311

250462 **Algebraic Topology** *(Elective Course)*  
Fundamental groups and covering spaces, separation theorems in the plane, the Seifert-van Kampen theorem, homology of surfaces, and related topics. Prerequisite: 250461, 250342

250471 **Mathematical Modeling**  
Construction, development, and study of mathematical models for real situations; basic examples, model construction, Markov chain models, models for linear optimization, selected case studies. Prerequisite: 250102 and 250241

280472 **Computational Number Theory**  
Basics of number theory: divisibility, primes, congruences; Overview of Public-Key Cryptography, RSA algorithm, Factoring algorithms, Pseudoprimes, Primality testing, topics in prime number search and related algorithms. Prerequisite: 710102, 250313

250473 **Advanced Applied Mathematics** *(Elective Course)*  
 Covers integral theorems of vector analysis, complex variables, series solutions to differential equations, Laplace and Fourier transforms, and use of mathematical software languages such as Maple and Mathematica. Prerequisite: 250311

250474 **Control Theory** *(Elective Course)*  
Topics in optimization problems; linear, nonlinear, and integer programming. Prerequisite: 250241
250476 Game Theory
Basic theorems, concepts, and methods in the mathematical study of games of strategy; determination of optimal play when possible. Prerequisite: 250241

250481 Instructional Strategies for Teaching Mathematics
The student will study and participate in instructional activities and strategies for mathematics that depart from the lecture style; e.g., cooperative learning or open-ended problem exploration. Students will design and conduct a mathematics lesson using such a strategy. Prerequisite: must have completed 90 credit hours.

280482 Pedagogy of Mathematics
Prerequisite: must have completed 90 credit hours

280491 Seminar
Students’ seminar series. Prerequisite: Department's agreement

280492 Special Topics
Individual guided study. Prerequisite: Department's agreement

2.5 Course Dependencies

In the following chart you will see the dependencies between some core Mathematics courses. The purpose of this chart is to present a graphic representation of the dependencies among the various courses and to suggest the best sequence of courses the student may follow. We refer the student to the tables in section 2.3 to see the prerequisite for each course.
Academic life consists of more than just classroom teaching and learning activities. Both students and teaching staff will be involved in supporting programs whose purpose is to enhance the educational experience through participation in research, tutoring, programming, and many other stimulating activities.

3.1 Seminars

The Department holds bi-weekly seminars with topics ranging through all current fields of mathematical research, Statistics, Chemistry, Physics, and other basic sciences and scientific education. Students are greatly encouraged to attend, and senior students are expected to participate as well in presenting at least one seminar topic in their final year.

We have an ongoing “Math is fun” lecture series, which is an open-for-all seminar with a popular topic presented in a rather non-technical language for the more general audience. The purpose of this series is also to introduce students to some of the current research topics and to encourage them to do further study on the subject. In the past semesters we have had talks covering topics such as “Chemistry and Life,” “Fermat's Last Theorem”, “Chemical Imaging”, etc.

3.2 Quality Assurance

The Department of Basic Sciences and Mathematics adheres to the Q.A. standards of excellence. This ensures that our teaching staff in all their teaching activities follow the same quality of work, which is well documented and organized according to the Q.A. requirements. Some of the standards we follow are described below...

3.3 Government Exam (ETS)

Graduating students are required by the Ministry of Higher Education to take an assessment test in their field of study. For our graduating Mathematics majors we conduct semester-long tutoring in order to prepare them for this examination. The areas of mathematics included in the exam are divided into the following five groups:

- Calculus and Differential Equations
- Real and Complex Analysis
- Probability and Statistics
- Abstract Algebra, Linear Algebra, and Number Theory
- Geometry and Topology

3.4 Facilities

The learning environment at the department of Basic Sciences and Mathematics provides the
students with supporting facilities and technical assistance.

**Library**
The main library, located next to the Computer Center, supports research facilities and houses hundreds of textbooks and international journals.

**Classrooms**
Lecture halls in our department are located in the tenth floor of the Science Faculty building. Each room has 40 seats and is equipped with a whiteboard and a projector screen.

**Seminar Room**
A seminar room is reserved for meetings by members or staff, conferences, and seminars. It is located at the tenth floor next to the Dean's office.

**Computers**
Computing facilities are provided by the University at various laboratories across the campus. Some of the available services are listed here.

- Computer laboratories: PC, LAN, UNIX, Workstation, Internet
- E-Learning Phoenix Training Center
- UNESCO Computer Training Program (ICDL)
- Software packages: Mathematica, Minitab, etc.
- CISCO Computer Training Center
- Microsoft Training Center

**Bookshops**
Local bookshops provide photocopying services and stationeries at convenient locations across the campus. The nearest stall for our department is located at the tenth floor, Science Faculty building. The main bookshop of the University is in the Business Administration Building.
The Department of Basic Sciences and Mathematics maintains its own website at the Philadelphia University domain name. The complete URL for the department is http://www.philadelphia.edu.jo/math/

It is highly recommended that each student get himself/herself familiar with the contents of the site as it provides updated news and important announcements concerning all our academic activities. We provide here the sitemap of our pages in order to guide you through the entire contents.

Basic Sciences Home
http://www.philadelphia.edu.jo/math/index.htm
The frontpage (index file) of the site. It contains a short list of most recent additions to the site, updated periodically.

About the Department
http://www.philadelphia.edu.jo/math/dept.htm
Who we are and a brief history of the department.

Mathematics Program
http://www.philadelphia.edu.jo/math/math.htm
Information about the Mathematics program, in fewer details than provided in this handbook. From this page you will be able to download a number of pdf files such as,

- Mathematics Brochure
  http://www.philadelphia.edu.jo/math/program/brochure.pdf
  A one-page brochure for promotional purposes, to be distributed to prospective students and interested companies.

- Course Requirements
  http://www.philadelphia.edu.jo/math/program/course.pdf
  A list of compulsory and elective courses for the Bachelor's degree in Mathematics. This is duplicated in Section 2.3 of this handbook.

- Four-Year Study Plan
  Course requirements, as above, distributed over four-year (8-semester) plan as a suggestion for a possible plan for a student to finish the program in 4 years.

- Department Handbook
  This is where this handbook is posted on the site.

Teaching Staff
http://www.philadelphia.edu.jo/math/staff.htm
The list of our teaching faculty members, each links to the lecturer's C.V. and other personal pages he/she has created.

Staff's Office Hours
http://www.philadelphia.edu.jo/math/hours.htm
A table displaying each teaching staff's office hours, office room and telephone numbers.
Course Descriptions
http://www.philadelphia.edu.jo/math/course.htm
Short descriptions of all Mathematics courses. This is the same information included in Section 2.4 of this handbook.

Current Syllabi
http://www.philadelphia.edu.jo/math/syllabi.htm
For each course taught at the Department, we provide a copy of the most recent syllabus as given by the respective instructor. This is the same copy distributed to students in the classroom at the beginning of the semester. All files are in pdf format. On this page you will also be able to download a copy of the complete list of textbook and references for all the Mathematics modules. The address is http://www.philadelphia.edu.jo/math/syllabi/textbooks.pdf

Exam Schedules
http://www.philadelphia.edu.jo/math/exam.htm
This is the page where we announce schedules for all examinations: First Exam, Second Exam, and Final Exam. You should check this page at least a week before the scheduled exam time listed in the syllabus. Exam schedules, especially for multi-section courses, are subject to change at short notice due to a heavy classroom reservation schedules by the entire Faculty.

Seminars & Events
http://www.philadelphia.edu.jo/math/event.htm
Announcements for all recent and upcoming seminars, conferences, talks, student's activities, etc.

Contact Us
http://www.philadelphia.edu.jo/math/contact.htm
Contact info for the Department of Basic Sciences and Mathematics.