Department of Mathematics

Chairperson: Abu-Khuzam, Hazar M.
Professors: Abi-Khuzam, Faruk F.; Abu-Khuzam, Hazar M.; Lyzzaik, Abdallah K.; Nahlus, Nazih S.; Nassif, Nabil R.; Nikiel, Jacek
Associate Professors: Haddad, John N.; Khuri-Makdisi, Kamal F.; Shayya, Bassam H.
Visiting Associate Professor: Brock, Friedmann
Assistant Professor: Bechtluft-Sachs, Stefan B.
Visiting Assistant Professors: Daher, Wassim E; Gebran, Hicham G.

The Department of Mathematics offers programs leading to the degree of Master of Science (MS) and Master of Arts (MA) in Mathematics and Statistics.

Graduate Program

MA or MS in Mathematics

Students must complete the university requirements for graduate study in the Faculty of Arts and Sciences, and at least 24 credits at the graduate level and a thesis. A minimum of 21 credits of the 24 must be at the graduate level, i.e., courses numbered 300 or above, and must include MATH 303, MATH 314, and MATH 341.

MA or MS in Statistics

Students must complete the university requirements for graduate study in the Faculty of Arts and Sciences, and at least 24 credits at the graduate level and a thesis. A minimum of 21 credits must be at the graduate level, i.e., courses numbered 300 or above. At least 18 of the 24 credits must be taken in the department, and must include MATH 303, STAT 331, STAT 332, STAT 333, and STAT 334. Students interested in taking courses outside the department may do so after obtaining approval from the department.
Graduate Courses

Mathematics

MATH 301/302 Graduate Tutorial Courses 1–3 cr.
Prerequisite: graduate standing or consent of instructor.

MATH 303 Measure and Integration 3.0; 3 cr.
A first course in measure theory, including general properties of measures, construction of Lebesgue measure in $\mathbb{R}^n$, Lebesgue integration and convergence theorems, $L^p$-spaces, Hardy-Littlewood maximal function, Fubini's theorem, and convolutions. Prerequisite: MATH 223.

MATH 304 Complex Analysis 3.0; 3 cr.
A second course in complex analysis, covering the homotopy version of Cauchy's theorem, the open mapping theorem, maximum principle, Schwarz's lemma, harmonic functions, normal families, Riemann mapping theorem, Riemannian metrics, method of negative curvature, Picard's theorem, analytic continuation, monodromy, and modular function. Prerequisite: MATH 227.

MATH 305 Functional Analysis 3.0; 3 cr.

MATH 306 Calculus on Manifolds 3.0; 3 cr.
Prerequisite: MATH 223.

MATH 307 Topics in Analysis 3.0; 3 cr.

MATH 314 Algebraic Topology I 3.0; 3 cr.
Closed surfaces, categories and functors, homotopy, the fundamental group functor, and covering spaces. Prerequisites: MATH 214 and MATH 241. Annually.

MATH 315 Algebraic Topology II 3.0; 3 cr.
Singular homology with applications to Euclidean spaces and an introduction to cohomology theory. Prerequisite: MATH 314. Annually.

MATH 316 Topics in Topology 3.0; 3 cr.

MATH 317 Modules and Rings 3.0; 3 cr.
Fundamental concepts of modules and rings, projective and injective modules, modules over a PID, Artinian and Noetherian modules and rings, semi-simplicity, and tensor products. Prerequisite: MATH 241. Annually.

MATH 318 Modules and Rings II 3.0; 3 cr.
A course covering more advanced topics in modules and rings. Prerequisite: MATH 341. Annually.

MATH 341 Field Theory 3.0; 3 cr.
Prerequisite: MATH 242.

Statistics

The graduate program in statistics is currently frozen. It is expected to be available in the near future.

STAT 331 Advanced Probability Theory 3.0; 3 cr.
Characteristic functions, types of convergence, limiting properties of distribution and characteristic functions, limit theorems, and multivariate functions. Prerequisites: MATH 227, STAT 238, and MATH 303. Annually.
STAT 332  Advanced Mathematical Statistics  3.0; 3 cr.
Distribution theory, decision theory, and advanced topics in estimation and inference. Prerequisites: STAT 235 and STAT 238. Annually.

STAT 333  Multivariate Analysis  3.0; 3 cr.
Multivariate distributions, correlation coefficients, classification and discrimination, Hotelling’s T2, tests of hypotheses for multivariate distributions, and canonical variables. Prerequisite: STAT 238. Annually.

STAT 334  Advanced Topics in Statistics  3.0; 3 cr.
Annually.

STAT 335  Special Topics from Probability and Statistics  3.0; 3 cr.
May be repeated for credit. Annually.

STAT 399  MA or MS Thesis  6 cr.