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Baruch math department

The major in mathematics is designed to enable the student to enter the marketplace (industrial or educational) or to pursue further studies in mathematics or allied fields at the graduate level. Interested students should meet with an advisor in the Department of Mathematics as early as possible for assistance in formulating an appropriate course of study.A student majoring in mathematics cannot declare a second major in statistics.Program Learning GoalsUpon completion of the two-year sequence in calculus, students will be able to:Differentiate and integrate a wide variety of algebraic and transcendental functions;Apply such knowledge to a variety of verbal problems in economics, physics, and related rates;Develop the Taylor series expansion for functions and compute the error terms occasioned by truncation of the series to a finite number of terms;Use geometric vectors to prove theorems;Deal with functions and surfaces (areas, volumes) in 3-dimensional space;Use other (than Cartesian) coordinate systems, especially polar coordinates, in the study of graphs and, by change of variable, to facilitate certain integrations;Follow subtle lines of reasoning, detect breaches of logic and validity, write sustained logical arguments;List several approaches to the real number system, such as Dedekind cuts, the Bolzano–Weierstrass property, the nested-interval property, the existence of suprema and infima of bounded sets, the convergence of Cauchy sequences.Upon completion of our courses in analysis beyond calculus, students will be able to:Point out the analogies—the interplay and interconnections—between corresponding real-valued functions of a real variable and complex-valued functions of a complex variable;Highlight some of the properties that follow from analyticity of functions on various domains;Perform computations with complex numbers, evaluate contour integrals, evolve Laurent series of functions;Show how metric spaces endowed with Euclidean and non-Euclidean metrics are particular examples of topological spaces;Present properties of metrizable and nonmetrizable topological spaces as generalizations of properties that originate in the set of real numbers;Explicate properties of connectedness and compactness in topological spaces.Upon completion of our courses in algebra, students will be able to:Trace the construction of the integral domain of rational integers and the fields of rational and complex numbers by successive refinements of, and additions to, the properties of a set;Show how abstract initial conditions can be used to derive facts and features of a variety of algebraic structures;Apply abstract algebra, which had its origins and motivation in number theory, back to number theory, to elucidate number-theoretic properties by placing them in a general (abstract) setting;Prove theorems about groups, rings, fields, and other algebraic structures;Account for the advantages of abstract formulations in mathematics;Define the dimension of a vector space in terms of the (unique) number of vectors in a basis, accomplish basis-to-basis transformations, compute characteristic values and vectors, and enumerate some of the profound connections among the invertibility of matrices, systems of linear equations, determinants, linear independence, spanning sets and bases, rank, orthogonality.Upon completion of our courses in geometry, students will be able to:Discourse with authority on the impact and role of initial assumptions (postulates) on the structure of a geometrical system, mainly with reference to Lobachevskian and Riemannian geometry;Cite facts (theorems) of Euclidean geometry that depend on the parallel postulate and hence are absent in neutral geometry;Provide examples of finite and infinite incidence geometries and their isomorphisms;Trace some of the history of geometry, especially as it concerns attempts to prove Euclid’s parallel axiom as a consequence of the other axioms;Speak on difficulties encountered in endeavoring to establish the physical validity of a geometric theory – which the actual geometry of the universe is, given the homogeneity of space with respect to the parallel postulate; and of courseCompose mathematically correct proofs of geometric statements.Upon completion of our other classes, students will be able to:Solve differential equations using series expansions, Laplace transforms, and other standard techniques [differential equations];Enunciate properties and applications of Eulerian, Hamiltonian, connected, cyclic, acyclic, planar, traversable, and other types of graphs [graph theory];Approach combinatorics problems from two points of view which, when united, lead to solutions of problems in combinatorics using permutations, combinations, partitions, mathematical induction [combinatorics];Trace the historical development of mathematics from antiquity to the present, including contributions to that cumulative subject from various cultures and countries [history of mathematics];Stipulate properties and characteristics of whole numbers – divisibility, the division algorithm, Diophantine equations, unique factorization, the integers modulo n, Fermat’s theorem, Euler’s theorem, representation in different bases [theory of numbers];Write computer programs in a high-level programming language to solve mathematical problems and verify their correctness, and invoke techniques of object-oriented programming to represent objects and their behaviors in code [algorithms, computers, and programming class]. In this program, undergraduates do research work in combinatorics, discrete probability, theoretical computer science, and related topics. The program runs for eight weeks during the summer in NYC. During this period, each participant works towards solving a problem and possibly publishing a paper. Each participant is closely mentored by a professor who is an active researcher and has mentoring experience. We are based in the math department of CUNY's Baruch College, located at the heart of Manhattan. The program is organized by Adam Sheffer and Pablo Soberón. In addition to intensive research work, the program includes many events: meetings with mathematicians, social events, mathematical talks, interactions with other REUs, a panel with people who chose various careers after studying math, and much more. Project examples. No previous familiarity with these topics is required. A few project examples: An example of a project by Eric Ramos. An example of a project by Kira. An example of a project by Adam (and another project about plane graphs). Matt will work on probability questions related to his recent papers on Activated Random Walk and the Frog Model. An example of a project of Eric Rowland. An inspiring article that is at the heart of our program (see also recorded talk). These are just examples. We offer many additional projects to the participants. See also the results produced in previous years. Additional details. For 2025, the dates are June 9th - Aug 1st. Each participant will be provided with a stipend of $5,600, housing in Manhattan, and travel support. Most participants work on their own individual project, some work in pairs, and some or may choose to work on a second group project. Each participant receives a fully equipped cubicle in the math department, close to the offices of the mentors. Beyond doing research work, the participants will get trained in giving math talks, writing rigorous proofs, applying to graduate school, and more. After the program ends, we keep supporting the participants for many years, as they continue in their mathematical pursuits. While we are serious about our research, we also aim create a supportive and accepting community of people who are enthusiastic about mathematics – people who would continue to support and encourage each other in future years. We dedicate time to discuss topics such as having a healthy and fulfilling mathematical careers, how to support the community around you, and so on. We are the only REU program with emotional support chickens. The program ends at the NYC Summer Math Day, where participants present posters to students from other nearby math programs. (Also organized by Jane Street Capital.) In the months after the program, most participants attend conferences to present their results. Applying to the REU. We look for undergraduates who are motivated to work hard on an open mathematical problem, and can also work independently between meetings with the mentors. To be eligible, your college graduation date must be after the end of the REU. We have funding for up to three international students, while the other participants should be US citizens or permanent residents. We may take additional international students who have funding from an institute, fellowship, or another official source. Using your own money is not permitted. We cannot help international students with obtaining a visa to the US. Applications are submitted through www.mathprograms.org. An application includes at least one reference letter, a CV (or resume), a cover letter, a transcript, and any additional information you wish to add. You may submit more than one reference letter. If you participated in a previous research project, please include a letter from your mentor in that program. Transcript do not need to be official. Under additional information, you can add past research projects, jokes, and/or any other relevant information. Please make sure to indicate if you are a US citizen or a permanent resident. The applications deadline is February 14th. We follow the REU consortium's uniform deadline - applicants will not be required to accept or decline an offer before March 8th. There are usually multiple rounds of offers - not getting an offer by March 9th does not mean anything. Cover letter and personal statement: Do whatever you want! You can include a personal statement in the cover letter, as a separate file, or not at all. You can write about why this program is for you, or not. You can write about your personal interests and experiences, or not. You can write about difficulties you experienced in your math community or elsewhere. Don't write when there's nothing you wish to say. You can also do something completely different. We once received a pdf with pictures of mathematicians in sunglasses, and that's good. It certainly got our attention :) REU participants must be vaccinated and follow the CUNY Covid regulations. You are very welcome to contact Adam Sheffer at adamsh@gmail.com for any questions, clarifications, or issues. More links: Quanta article about a result from the REU. Eric Rowland makes surprisingly popular YouTube videos about advanced math. Matt Junge does math with prison inmates. Baruch College | One Bernard Baruch Way 55 Lexington Avenue (at 24th Street) | New York, NY 10010 646-312-1000 | info@baruch.cuny.edu 646-312-1000 Reddit and its partners use cookies and similar technologies to provide you with a better experience. By accepting all cookies, you agree to our use of cookies to deliver and maintain our services and site, improve the quality of Reddit, personalize Reddit content and advertising, and measure the effectiveness of advertising. By rejecting non-essential cookies, Reddit may still use certain cookies to ensure the proper functionality of our platform. For more information, please see our Cookie Notice and our Privacy Policy. Baruch College's faculty members are talented educators, esteemed researchers, and thought leaders in a variety of disciplines. They are affiliated with Baruch's three schools—Austin W. Marxe School of Public and International Affairs, Weissman School of Arts and Sciences, and Zicklin School of Business. Faculty teach, mentor, and provide academic advisement, counseling, and support within the three schools and in the William and Anita Newman Library, Percy Ellis SEEK Program, and College Now. Learn more about our diverse faculty members and their outstanding achievements. Reddit and its partners use cookies and similar technologies to provide you with a better experience. By accepting all cookies, you agree to our use of cookies to deliver and maintain our services and site, improve the quality of Reddit, personalize Reddit content and advertising, and measure the effectiveness of advertising. By rejecting non-essential cookies, Reddit may still use certain cookies to ensure the proper functionality of our platform. For more information, please see our Cookie Notice and our Privacy Policy. 120 Credits minimum required for the Bachelor of Business Arts (BA) degree 90 Liberal Arts Credits minimum required for the BA 2.0 GPA required to remain in good academic standing and to graduate Liberal Arts Minor required to graduate (part of College Option) – Math majors cannot minor in Mathematics Use the Degree Map along with DegreeWorks as tools to assist you in planning your academic path to graduation. You should customize your Degree Map to fit your individual needs Writing I English Composition I 3 CR Writing II English Composition II 3 CR Calculus I Math & Quantitative Reasoning 4CR Calculus II Program Prerequisite Requirement 4 CR First Year Seminar Degree Requirement 0 CR Speech Communication Pre-Weissman Requirement 3 CR Pathways Requirement 3 CR Pathways Requirement 3 CR Pathways Requirement 3 CR Pathways Requirement 3 CR Pathways Requirement 3 CR ¹Students who receive credit for Math 2205, 2206, or 2207 with a grade of C+ or higher, will take Math 3006 instead of Math 3010 *FYS 1000 is required for the first term & MUST be completed to graduate. Calculus III Program Prerequisite Requirement 4CR Algorithms, Computers, and Programming I Major Requirement 3 CR Natural Sciences Lab Course Pathways Requirement 3 CR Linear Algebra & Matrix Methods Major Requirement 3 CR Natural Sciences Lecture Course Pathways Requirement 3 CR 2nd Semester of Foreign Language Pre-Weissman Requirement 3 CR 1st Semester of Foreign Language Pre-Weissman Requirement 3 CR Elective Requirement 3 CR Elective Requirement 3 CR Elective Requirement 3 CR ¹Students who receive credit for Math 2205, 2206, or 2207 with a grade of C+ or higher, will take Math 3030 instead of Math 3020 *Free electives can be any business, liberal arts, or public affairs course. Pathways College Option Requirement 3 CR Great Works of Literature I or II Pathways College Option Requirement 3 CR Prerequisite to MTH 4010 Major Requirement 3 CR Mathematical Analysis I Major Requirement 4 CR Major Requirement 4 CR Major Requirement 3 CR Elective Requirement 3 CR Pathways College Option Requirement 3 CR Elective Requirement 3 CR Elective Requirement 3 CR *Free electives can be any business, liberal arts, or public affairs course. Major Requirement 3 CR Major Requirement 4 CR Liberal Art Minor Capstone Pathways College Option Requirement 3 CR Elective Requirement 3 CR Elective Requirement 3 CR Elective Requirement 3 CR Elective Requirement 3 CR Elective Requirement 3 CR *Free electives can be any business, liberal arts, or public affairs course. *Free electives can be any business, liberal arts, or public affairs course. Important Notes Students interested in this major should consult with the Math Department, located in VC 6-230 Students majoring in Mathematics should meet with an advisor in the Mathematics Department to fill out a major declaration form Liberal Arts Elective The following subjects are considered liberal arts and can be taken at any level to satisfy liberal arts electives: AAS ANT ART BIO BLS CHM COM CMP ECO ENG ENV FLM FPA GLS HED HIS HSP IDC JRN LACS LIB LTS MSC MTH NMA PHI PHY POL PSY REL SOC THE WSM ALL MODERN LANGUAGES Non-Liberal Arts The following courses are not considered liberal arts: ART 5010 ART 5011 COM 4059 ECO 5010 ECO 5011 FPA 5070 FPA 5071 HED 1810 HED 2920 MSC 2061 MSC 2062 MSC 2063 MSC 2064 MSC 5050 MSC 5051 SOC 4085 SOC 4086 ART/MSC/THE Studio Elective Courses Career Exploration The study of mathematics is excellent preparation for a host of employment opportunities in business, finance, insurance, technology, scientific research, and any field that has challenging problems to solve. There is a steady, strong demand for math majors. These careers focus on discovering the essence of problems, synthesizing general theories to address problems, and applying quantitative reasoning across a variety of situations. Data Analyst Analysis Investment Banker Communication Simulation Modeler Problem Solving Operations Manager High Computer Proficiency Compensation Analyst Modeling MAJOR CAREER GUIDES CAREER OUTCOMES BY MAJOR Meet with a Peer Advisor for help with creating your 3-semester plan & much more! Welcome to my homepage! I am an Assistant Professor of Mathematics at CUNY Baruch College. My research interests are centered around Analysis & PDEs.Contact Information: Newman Vertical Campus,55 Lexington Ave New York, NY, 10010, USAOffice: 6-246☎ (646)-312-4122
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