MATHEMATICS AND STATISTICS

The Department of Mathematics and Statistics at Loyola University Chicago, in the College of Arts and Sciences, supports the Jesuit ideal of knowledge in the service of humanity. The department endeavors to advance knowledge in mathematics and statistics, engaged with Chicago, the nation and the world. To achieve this mission, the department participates in the discovery, development, demonstration and dissemination of professional knowledge and practice within a context of professional ethics and service to others.

Beyond honing students' analytical skills, the mathematics and statistics curricula also foster critical thinking and the ability to articulate it... skills that are in high demand in many diverse fields.

The Department of Mathematics and Statistics will work to ensure that we invest in each student's success, sense of belonging, and cultural competency. We will strive to engage, empower, inform, and hold our faculty and students accountable for fostering an environment where every person shares in the responsibility for advancing diversity and inclusive excellence. Likewise, the department decisions and policies will be crafted with these goals in mind. We commit to this mission recognizing a definition of diversity that includes, but is not limited to, race, ethnicity, color, religion, national or ethnic origin, sex, age, military/veteran status, disability, marital status, sexual orientation, gender identity and expression, socio-economic background, and residency.

Graduate Programs

- Applied Statistics (MS) (https://catalog.luc.edu/graduate-professional/graduate-school/arts-sciences/mathematics-statistics/applied-statistics-ms/)
- Mathematics (MS) (https://catalog.luc.edu/graduate-professional/graduate-school/arts-sciences/mathematics-statistics/mathematics-ms/)

Mathematics (MATH)

MATH 401 Introduction to Graduate Study in Mathematics (1 Credit Hour)
Pre-requisites: Graduate Student status
This is a professional development seminar for the beginning graduate student. Through short lectures, faculty panels, career panels, regular reading and writing assignments, and assorted workshops, it provides the student with the tools they need to succeed in the program, and beyond.
Outcomes:
Students will: gain practice reading, writing, listening to, and summarizing advanced mathematics; learn the pedagogical, ethical, and DEI matters associated with careers in the mathematical sciences; gain practice giving lectures, writing problem-sets, and grading mathematics; explore possible career trajectories

MATH 404 Probability & Statistics I (3 Credit Hours)
As the first part in a two-semester sequence, this course introduces basic principles of probability including combinatorial methods, probability and cumulative density and mass functions, moment generating functions and applications, expected values and variance and other moments, and order statistics. This course emphasizes related theorems and proofs.
Course equivalencies: X-MATH404/STAT404

MATH 405 Probability & Statistics II (3 Credit Hours)
As the second part in a two-semester sequence, this course thoroughly explores the central limit theorem and its variants and uses, estimation, hypothesis testing, sufficiency, efficiency, uniformly most powerful methods, information, and asymptotic methods. Time permitting, Bayesian topics may also be explored and discussed.
Course equivalencies: X-MATH405/STAT405

MATH 406 Stochastic Processes (3 Credit Hours)
This course addresses topics such as finite-state Markov processes and Markov chains, classification of states, long-run behavior, continuous time processes, birth and death processes, random walks, and Brownian motion.
Course equivalencies: X-MATH406/STAT406

MATH 409 Advanced Numerical Analysis (3 Credit Hours)
Pre-requisites: Some background in programing, linear algebra and differential equations
An introduction to numerical techniques for solving mathematical problems where exact solutions are impractical or computationally intensive. Topics include numerical errors, root finding, interpolation and approximation, methods for solving systems of linear equations, high order numerical differentiation and integration, eigenvalue problems, numerical solutions to ordinary and partial differential equations, and other selected topics.
Course equivalencies: X-COMP409/MATH409
Outcomes:
Students will obtain an understanding of theoretical concepts and rigorous analytical skills for the use of numerical methods to analyze and solve complex mathematical and real-world problems

MATH 413 Algebra I (3 Credit Hours)
Pre-requisites: Graduate standing
This course covers basic algebraic structures, focused mainly on groups. Topics include normal subgroups, isomorphism theorems, and actions on sets. Additional topics chosen from the theory of groups or closely related structures.
Outcomes:
Students will strengthen their ability to read, understand, and communicate arguments about groups and their actions, preparing them for further advanced work in mathematics

MATH 414 Algebra II (3 Credit Hours)
Pre-requisites: MATH 313 or MATH 413 or permission from the Graduate Program Director
This course covers basic algebraic structures, focused mainly on rings, fields and Galois theory. Additional topics chosen from the theory of rings fields or closely related structures.
Outcomes:
Students will strengthen their ability to read, understand, and communicate arguments about rings and fields, preparing them for further advanced work in mathematics

MATH 415 Topics in Linear Algebra (3 Credit Hours)
Pre-requisites: Graduate standing
An abstract approach to the study of finite- and infinite-dimensional vector spaces and their transformations. Selected topics may include similarity, duality, canonical forms, singular value decomposition, inner products, discrete Fourier transform, bilinear forms, Hermitian and unitary spaces.
Outcomes:
Students will strengthen their ability to read, understand, and communicate arguments about finite- and infinite-dimensional vector spaces and their transformations, preparing them for further advanced work in mathematics

MATH 416 Survey of Algebra (3 Credit Hours)
Pre-requisites: Graduate Student status
A survey course in three parts. I: the theorems of Burnside, Sylow, and Jordan-Holder, toward the classification of finite simple groups. II: (noncommutative) rings and modules over PIDs, including applications to classification problems. III: additional topic chosen by instructor, e.g., category theory, homological algebra, division rings, and representation theory.
Outcomes:
Students will demonstrate facility with standard proof techniques in abstract algebra, and the ability to work with algebraic structures (including actions, morphisms, and quotients; concretely and abstractly); Students will recognize the common theme of classification uniting the course topics

MATH 418 Combinatorial Mathematics (3 Credit Hours)
An introduction to the basic methods of counting and generation, including: induction, pigeon-hole principle, permutations, combinations, recurrence relations, generating functions, and inclusion-exclusion principle. Topics drawn from partitions, graph theory, graph coloring, and combinatorial design, Polya's theory, Ramsey's theorem, and optimization problems.
Course equivalencies: X-COMP418/MATH418

MATH 420 Topics in Mathematical Logic (3 Credit Hours)
Pre-requisites: MATH 313 or MATH 351 or permission of the instructor
This course will be a mathematical study of the concepts of truth and proof and how they relate to each other. The main topics to be covered are propositional logic, first order predicate logic, computability and undecidability results.
Outcomes:
Students will develop proof writing skills, expand mathematical literacy, understand the expressive power and limitations of propositional and predicate logics and learn the mathematical meaning of "truth" and "proof"

MATH 422 Advanced Topics in Number Theory (3 Credit Hours)
Pre-requisites: MATH 201 or the equivalent or permission of the instructor
Topics chosen from: Pythagorean triples, Fermat's Last Theorem, Pell's equation, Fermat descent, primes in arithmetic progressions, Mersenne primes, perfect numbers, primitive roots, primality testing, Carmichael numbers, RSA encryption, quadratic residues, quadratic reciprocity, integers as the sum of squares, Gaussian integers, continued fractions, the distribution of primes, Diophantine approximation, elliptic curves; others.
Outcomes:
Understand the importance of historically significant concepts and problems in number theory; Understand the proofs of related theorems; Solve problems and prove theorems from topics covered in class

MATH 428 Algebraic Coding Theory (3 Credit Hours)
Codes with algebraic structure for error control are examined. Block codes including Hamming codes and Reed-Muller codes, BCH codes, quadratic residue codes, and other cyclic codes and their implementation are treated. Other topics may include: convolutional codes, efficiency considerations, and Shannon's fundamental theorem of information theory.
Course equivalencies: X-COMP428/MATH428

MATH 431 Cryptography (3 Credit Hours)
This course introduces the formal foundations of cryptography and also investigates some well-known standards and protocols, including private and public key cryptosystems, hashing, digital signatures, RSA, DSS, PGP, and related topics. Additional topics may include more modern cryptosystems, such as those based on elliptic curve and lattices.
Course equivalencies: X-COMP431/MATH431

MATH 443 Intro to Algebraic Topology (3 Credit Hours)
In the study of topology, algebraic constructions (called "invariants") are used to help determine whether two differently presented topological spaces are indeed different. In this course, we introduce various topics related to this endeavor, including homotopy equivalence of topological spaces, group presentations, homomorphisms of spaces and of groups, covering spaces, the fundamental group, and homology theories. Time permitting, the cohomology ring of a space will also be introduced.

MATH 444 Topics in Geometry (1-3 Credit Hours)
An axiomatic approach to the study of geometry. While Euclidean geometry will be the main focus, elliptic and hyperbolic geometries will also be studied in detail. Additional non-Euclidean geometries (including projective, metric, and finite) and additional approaches (such as transformations and synthetic treatments) will also make an appearance.

MATH 445 Financial Math Derivatives (3 Credit Hours)
A first course in the mathematics of derivatives pricing. Topics include options markets, Black-Scholes pricing formulas, stochastic calculus, hedging schemes, binomial option pricing, exotic options, and more general derivatives.

MATH 451 Analysis I (3 Credit Hours)
Pre-requisites: Graduate Standing
A rigorous review of the topology of, and of the functions on, the real line and more general metric spaces. Topics include sequences, including sequences of functions, completeness, compactness, continuity, uniform continuity, and differentiation.
Outcomes:
Students will master the mathematical rigor behind undergraduate real analysis and obtain preparation for further graduate courses in analysis and its applications

MATH 452 Analysis II (3 Credit Hours)
Pre-requisites: MATH 451 or MATH 351 or permission from the Graduate Program Director
A continuation of MATH 451. A rigorous treatment of Riemann and elements of Lebesgue integration, series, including series of functions, and select topics in continuity and differentiation of multivariable functions, fixed point, implicit and inverse function theorems.
Outcomes:
Students will master the mathematical rigor behind undergraduate real analysis and obtain preparation for further graduate courses in analysis and its applications

MATH 453 Complex Analysis (3 Credit Hours)
Pre-requisites: MATH 351 or MATH 451 or permission from the Graduate Program Director
A rigorous introduction to the algebra and geometry of complex numbers, topology of the complex plane, and the theory of functions of a complex variable, including: analytic functions, contour integrals, the Cauchy integral formula, harmonic functions, Laurent series, residues and poles, conformal mapping, analytic continuation, transfer theory, etc.
Outcomes:
Students will master the mathematical rigor behind undergraduate complex analysis, gain exposure to advanced topics in complex analysis, and obtain preparation for further graduate courses in analysis and its applications

MATH 454 Survey of Analysis (3 Credit Hours)
Pre-requisites: Graduate Student status
An introduction to advanced topics in analysis, including measure theory, functional analysis and partial differentials equations. Measurable sets; the Lebesgue integral in Rn; Lp and other function spaces; weak convergence; Lax-Milgram Theorem; and the calculus of variations. These topics are then applied to the study of linear PDEs. Students will be able to apply these concepts to study PDEs.
Outcomes:
Students will understand the central elements of Lebesgue integration (from measurable sets to the fundamental theorem of calculus for Lebesgue integrals) and of Lp spaces (including Minkowski and Hölder inequalities)

MATH 456 Mathematical Modeling (3 Credit Hours)
Pre-requisites: Graduate standing
This course will involve students using various areas of mathematics, such as vector calculus, linear algebra, and differential equations, to formulate and analyze mathematical models in, for example, mechanics, physics, biology, economics, etc.
Outcomes:
Students will gain experience using the tools from previous mathematics classes to formulate models of real world phenomena

MATH 458 Optimization (3 Credit Hours)
Pre-requisites: MATH 351 or permission from the Graduate Program Director
The course is a rigorous treatment of linear, nonlinear, and integer optimization, and may include optimization on graphs, stochastic optimization, etc. Modeling of real-life problems as optimization problems, mathematical analysis of resulting optimization problems, including proving existence of solutions, optimality conditions, convergence of algorithms, and computational approaches to solving the problems will be covered.
Course equivalencies: X-MATH458/STAT458/428
Outcomes:
Students will learn how to recognize optimization problems, model real-life challenges as optimization problems, solve the problems using computational methods, and perform rigorous mathematical analysis of the problems and prove convergence of the computational methods

MATH 460 Game Theory (3 Credit Hours)
Pre-requisites: Graduate standing
The theory and applications of noncooperative and cooperative games. Two person zero sum matrix games, nonzero sum N-person games, Nash equilibria of games with a continuum of strategies, auctions, duels. Cooperative game theory, including the theory of bargaining, the theory of fair allocation of rewards using the nucleolus and using the Shapley value.
Outcomes:
Students will obtain an understanding of the fundamentals of mathematical game theory, including the theoretical underpinnings of this theory, and will be able to apply this knowledge in a variety of settings

MATH 464L History of Math with Science Contributions for Middle Grades (3 Credit Hours)
This course will provide a thematic approach to the history of mathematics with emphasis on contributions by noted mathematicians, mathematical societies and scientists highlighting women and under-represented populations. The history of numbers and numerals, computation, geometry, algebra, trigonometry, calculus, and science patterns will be explored emphasizing the contributions of the Babylonian, Egyptian, Chinese, and Roman civilizations as well as such individuals as Euclid, Fermat, Archimedes, Kepler, Pythagoras, Euler, Hypatia, Sonja Kovalevsky, Emmy Noether and others as appropriate. The influence of technology and its applications will also be presented as appropriate.
Outcomes:
Students will obtain a unique historical perspective on the various areas of mathematics in the middle grades

MATH 465 Introduction to Partial Differential Equations (3 Credit Hours)
This course is an introduction to the subject of partial differential equations. Focus will be on studying linear partial differential equations, such as the wave equation, that appear ubiquitously in nature. To solve these equations we will use techniques such as separation of variables and Fourier series. We will also discuss different boundary conditions, and their physical interpretation.
Course equivalencies: X-MATH465/STAT465

MATH 466L Geometry with Science Applications for the Middle Grades (3 Credit Hours)
Pre-requisites: This course is limited to graduate education students only; it is not accepted for other Mathematics and Statistics graduate degree programs
No course description is available

MATH 468L Probability and Statistics with Science Applications for Middle Grades (3 Credit Hours)
Pre-requisites: School of Education Graduate Program
Data collection and display, simulations, surveys, probability and elementary statistics such as mean, median, mode, standard deviation, etc. will be the focus of this course (Illinois Learning Standard Goal 10) Appropriate techniques for graphing (scatter plots, histograms, regression, correlation) with and without technology will be a focus of this course.
Outcomes:
Students will obtain a background in the fundamentals of descriptive and inferential statistics

MATH 469L Mathematics and Science Applications for Middle Grades (3 Credit Hours)
Mathematical concepts such as rates, ratios and proportions, probability and statistics and measurement that support scientific investigation and analysis will provide the focus for this course. Hands-on activities that illustrate the connections be used. Hands-on activities that illustrate the connections between Science and Math and appropriate use of technology will be emphasized.
Outcomes:
Students will acquire knowledge of mathematics that supports scientific investigation for the middle grades

MATH 475 Functional Analysis (3 Credit Hours)
Metric, normed, Banach, Hilbert, and sequence spaces. Linear operators and Fourier analysis. Hahn-Banach extension principle, Baire category, and uniform boundedness. Selected applications to economics, physics, engineering, and quantum theory.

MATH 476 Automata & Formal Languages (3 Credit Hours)
Pre-requisites: MATH 201 or MATH 212 or COMP 163
No course description is available
Course equivalencies: X-COMP476/MATH476

MATH 486 General Topology (3 Credit Hours)
Pre-requisites: Graduate standing
This course builds on the basics of point-set topology and discusses topological spaces, continuity, connectedness and path-connectedness, compactness, product spaces, quotient spaces, metric spaces, countability and separation axioms. Further topics may include category theory and basic homotopy theory.
Outcomes:
Students will strengthen their ability to read, understand, and communicate arguments about general topological spaces, preparing them for further advanced work in mathematics

MATH 488 Special Topics in Mathematics (1-4 Credit Hours)
Selected topics in mathematics not covered in the department's regular course offerings. May be repeated for credit.

MATH 495 Graduate Practicum in Mathematics (2 Credit Hours)
Pre-requisites: MATH 401 and (MATH 414 or MATH 452 or MATH 416 or MATH 454); Graduate Student status
A project-based course. Under faculty consultation, students will design and independently carry out a research project devoted to the development, pedagogy, or application of mathematics. To earn credit for this course, the student will deliver both an oral presentation and technical paper at the level expected in the professional workplace.
Outcomes:
Students will have: analyzed professional literature from multiple sources, resulting in a motivating question for the project; gained practice communicating clearly, concisely, and in-step with discipline norms; and contributed to the learning, teaching, or application of mathematics through their findings

MATH 498 Independent Study (1-6 Credit Hours)
This is a directed study course undertaken by advanced students and supervised by a member of the graduate faculty.

MATH 595 Thesis Supervision (0-6 Credit Hours)
Research under faculty guidance including training in scientific writing and the production of a thesis and research presentation.

MATH 605 Master's Study (0 Credit Hours)
This course is a non-credit means of permitting students to be formally enrolled at Loyola while preparing for the final practicum.

Statistics (STAT)

STAT 401 Introduction to Applied Statistics Using R (1 Credit Hour)
Pre-requisites: Limited to Graduate Students Only
This course covers the basics of applied statistics including descriptive statistics and visualization (including graphing), univariate methods, inference, hypothesis testing and confidence intervals, two-sample and paired analyses, simple and multiple linear regression, ANOVA and logistic regression. The course introduces and uses the R freeware package.
Outcomes:
Upon completion of this course, it is expected that students will skillfully and accurately perform real-time data analysis using R and R/Studio

STAT 403 SAS Program & Applied Statistics (3 Credit Hours)
While simultaneously reviewing basic statistical methods (t tests, regression, ANOVA, interaction, etc.), this course introduces statistical modelling using the SAS program, involving the DATA step and various SAS procedures. Working on hands-on projects using real datasets, students present their final project results.

STAT 404 Probability & Statistics I (3 Credit Hours)
As the first part in a two-semester sequence, this course introduces basic principles of probability including combinatorial methods, probability and cumulative density and mass functions, moment generating functions and applications, expected values and variance and other moments, and order statistics. This course emphasizes related theorems and proofs.
Course equivalencies: X-MATH404/STAT404

STAT 405 Probability & Statistics II (3 Credit Hours)
As the second part in a two-semester sequence, this course thoroughly explores the central limit theorem and its variants and uses, estimation, hypothesis testing, sufficiency, efficiency, uniformly most powerful methods, information, and asymptotic methods. Time permitting, Bayesian topics may also be explored and discussed.
Course equivalencies: X-MATH405/STAT405

STAT 406 Stochastic Processes (3 Credit Hours)
This course addresses topics such as finite-state Markov processes and Markov chains, classification of states, long-run behavior, continuous time processes, birth and death processes, random walks, and Brownian motion.
Course equivalencies: X-MATH406/STAT406

STAT 407 Statistical Design (3 Credit Hours)
This course provides students with a thorough introduction to statistical experimental design and to the statistical methods used to analyze the resulting data. The concepts of comparative experiments, ANOVA and mean separation procedures will be reviewed; blocking (complete and incomplete) will be discussed, as will be factorial designs, fractional factorial designs, and confounding. The course will focus on biometric applications such as clinical trials, HIV studies, and environmental and agricultural research, but industrial and other examples will occasionally be provided to show the breadth of application of experimental design ideas.

STAT 408 Applied Regression Analysis (3 Credit Hours)
This course provides students with a thorough introduction to applied regression methodology. The concept of simple linear regression will be reviewed and discussed using matrices, and multiple linear regression, transformations, diagnostics, polynomial regression, indicator variables, model building and multicolinearity will be discussed, as will be nonlinear and generalized linear regression. The course will focus on applications such as those from biometry and biostatistics (clinical trials, HIV studies, etc.), sports, engineering, agriculture and environmental science.

STAT 410 Categorical Data Analysis (3 Credit Hours)
This course provides an introduction to modern-day extensions of simple linear regression and ANOVA to the chi-square test including logistic regression and log-linear modeling techniques based on generalized linear models. Specialized methods for ordinal data, small samples, multi-category data, and matched pairs will also be discussed. The focus throughout this course will be on applications and real-life data sets.

STAT 411 Applied Survival Analysis (3 Credit Hours)
Modern statistical methods are covered to analyze data that is right, left and/or interval-censored. Nonparametric approaches such as the Kaplan-Meier estimation technique, log-rank test and proportional-hazards model are considered as are parametric methods such as those based on the Exponential and Weibull distribution. Accelerated failure time models and nonlinear models are also discussed.

STAT 421 Math Modeling & Simulation (3 Credit Hours)
This course uses SAS, R and high-level languages to perform statistical modelling by conducting statistical simulations to assess linear, generalized linear, nonlinear and complex models and experimental designs. Students will gain practical experience and knowledge in real-world statistical situations for which underlying theory is cumbersome or otherwise intractable.
Course equivalencies: X-COMP421/MATH421/STAT421

STAT 426 Advanced Statistical Inference (3 Credit Hours)
This course presents the role of likelihood methods in a whole range of statistical problems. The course reviews theoretical developments such as efficiency, completeness, and the Cramer-Rao lower bound, and shows how the likelihood approach is used to surpass these methods and to analyze regression problems, to deal with nuisance parameters by using marginal likelihood methods, and to deal with complex data structures such as censored and spatial data.

STAT 436 Topics in Biostatistics (3 Credit Hours)
This course covers experimental design (including interaction, analysis of covariance, and crossover designs) and the analysis of designed studies, simple and multiple linear regression, generalized linear and nonlinear regression, bioassay, relative potency and drug synergy, multivariate analysis (including MANOVA and multivariate regression), repeated measures (designs and analysis), and survival analysis (Cox proportional odds, log-rank tests, Kaplan-Meier estimation) of censored data. The emphasis of the course will be on applications instead of statistical theory, and students will be required to analyze real-life datasets using popular statistical packages.

STAT 437 Quantitative Bioinformatics (3 Credit Hours)
This course explores recently developed mathematical, probabilistic and statistical methods currently used in the fields of bioinformatics and DNA microarray and protein array data analysis. These include stochastic processes, (hidden and traditional) Markov chains, tree- and clustering techniques (including principal components analysis and biplots), discriminant analysis, experimental design strategies and ANOVA methods. Our focus in this course is on the application of these techniques and on meaningful interpretation of results.

STAT 438 Introduction to Predictive Analytics (3 Credit Hours)
Pre-requisites: Graduate students only
This course focuses on finding patterns, associations, and relationships in data. In examining real-world datasets, this course highlights, develops and applies methods in simple and multiple linear and logistic regression, classification and discriminant analysis, resampling methods, model selection, additive models and splines, tree-based methods, support vector machines, and unsupervised learning techniques such as clustering and PCA.
Outcomes:
Upon completion of this course, it is expected that students will master applied methods in predictive analytics (using R and/or Python) with applications to real data-sets

STAT 444 Longitudinal Data Analysis and Mixed Modeling (3 Credit Hours)
Pre-requisites: Graduate Students only
This course focuses on repeated measures, longitudinal, hierarchical and mixed modeling data analysis with an eye to applications, model identification, software implementation, and interpretation of computer results.
Outcomes:
Upon completion of this course, it is expected that students will master applied mixed-modelling methods (using R and/or SAS) with applications to real data-sets

STAT 451 Applied Nonparametric Methods (3 Credit Hours)
Pre-requisites: Graduate Students only
Many basic statistical techniques are based upon normal or binomial distributional assumptions which may not be appropriate in practice. This course introduces and illustrates rank-based methods, permutation tests, bootstrap methods, and curve smoothing useful to analyze data when normal and/or binomial assumptions are not valid.
Outcomes:
Upon completion of this course, it is expected that students will master applied nonparametric statistical methods (using R and/or SAS) with applications to real data-sets

STAT 465 Actuarial Theory I (0 Credit Hours)
This course provides an introduction to the models and methods used in actuarial mathematics and risk theory. Students are expected to gain a broad understanding of frequency and severity modelling, pricing, and accumulated risk. This course includes a blend of theory and applications.
Course equivalencies: X-MATH465/STAT465

STAT 466 Actuarial Theory II (0 Credit Hours)
With an introductory background in the field provided in STAT 465, this course thoroughly explores modelling and estimation techniques in actuarial mathematics and risk theory.
Course equivalencies: X-STAT466/MATH466

STAT 468 Risk Theory (0 Credit Hours)
With a focus on insurance, pensions and investments, this course provides an overview of the theory of risk, emphasizing the statistical challenges and assumptions inherent in models and methods.
Course equivalencies: X-STAT468/MATH468

STAT 488 Topics in Statistics (1-3 Credit Hours)
This topics course provides the means for new courses on current or 'hot' topics to be offered to students, with the topics being crafted to the given topic at hand. As such, the course may be taken repeatedly.

STAT 495 Statistical Consulting Capstone (2 Credit Hours)
Pre-requisites: Graduate Students only
Students enrolled in this course will be introduced to statistical consulting techniques useful for work with researchers and decision-makers in university, medical, financial and industrial settings; students will engage in actual hands-on statistical consulting with administrators, researchers, or students at one of Loyola's lakeside campuses or remotely.
Outcomes:
Upon completion of this course, it is expected that students will master the soft-skills of statistical consulting, communication, active listening, and real-time data analysis

STAT 498 Independent Study Statistics (1-6 Credit Hours)
Working with a statistics faculty member on a one-on-one or small group format, this course affords students the opportunity to thorough explore a statistical topic at greater depth. Generally, it involves a good deal of outside reading and/or programming, and weekly meetings with the professor.