APPLIED STATISTICS (MS)

Loyola's Master of Science in Applied Statistics emphasizes applied statistics and predictive modeling which gives students an advantage in evidence-based fields such as biomedical, environmental, marketing, educational, financial, and contract research (CRO) sectors. Our program can also be completed on a part-time basis and while working full-time.

Related Programs

Master's

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

Minor

- Statistics Minor (https://catalog.luc.edu/undergraduate/arts-sciences/mathematics-statistics/statistics-minor/)

Curriculum

The Master of Science in Applied Statistics requires 30 credit hours of coursework.

Required Courses

Code	Title	Hours
STAT 401	Introduction to Applied Statistics Using R	1
STAT 403	SAS Program & Applied Statistics	3
STAT 404	Probability & Statistics I	3
STAT 405	Probability & Statistics II	3
STAT 407	Statistical Design	3
STAT 408	Applied Regression Analysis	3
STAT 495	Statistical Consulting Capstone	2
Select Four (4) Elective Courses		*12*
STAT 406	Stochastic Processes	
STAT 410	Categorical Data Analysis	
STAT 411	Applied Survival Analysis	
STAT 421	Math Modeling & Simulation	
STAT 426	Advanced Statistical Inference	
STAT 436	Topics in Biostatistics	
STAT 438	Introduction to Predictive Analytics	
STAT 444	Longitudinal Data Analysis and Mixed Modeling	
STAT 451	Applied Nonparametric Methods	
STAT 488	Topics in Statistics	
STAT 498	Independent Study Statistics	
Total Hours		**30**

Specializations

Our flexible program allows students to focus on their interests by choosing a specialization. Possibilities include:

Specialization	Description
Biostatistics	The Biostatistics specialization covers non- and pre-clinical statistical methods, bioassay, statistical genetics, clinical trials, and bioinformatics.
Environmental Statistics	The Environmental Statistics specialization addresses Geographic Information Systems (GIS), spatial statistics, and environmetrics.
General Applied Statistics	The specialization in General Applied Statistics includes non-medical applications such as actuarial, commercial, data-mining, industrial, marketing, and national defense.
Predictive Analytics/ Modeling	The Predictive Modeling specialization focuses on big data analytics and modeling.

Suggested Sequence of Courses

The below sequence of courses is meant to be used as a suggested path for completing coursework. An individual student's completion of requirements depends on course offerings in a given term as well as the start term for a major or graduate study. Students should consult their advisor for assistance with course selection.

The below suggestion is for Fall full-time entrants. Adjustments are made for Summer or Spring entrants. Adjustments are also done on a case-by-case basis for part-time students or if discussed with the Graduate Program Director.

Course	Title	Hours
Year 1		
Fall		
STAT 401	Introduction to Applied Statistics Using R	1
STAT 403	SAS Program & Applied Statistics	3
STAT 404	Probability & Statistics I	3
STAT 408	Applied Regression Analysis	3
	Hours	**10**
Spring		
STAT 405	Probability & Statistics II	3
Two 400-level STAT Electives		6
	Hours	**9**
Summer		
One 400-level STAT Elective [1]		3
	Hours	**3**
Year 2		
Fall		
STAT 407	Statistical Design	3
STAT 495	Statistical Consulting Capstone	2
One 400-level STAT Elective [1]		3
	Hours	**8**
	Total Hours	**30**

[1] If no elective is taken during the Summer term, it is expected that students will take two (2) 400-level STAT courses in Fall term Year 2.

Graduate & Professional Standards and Regulations

Students in graduate and professional programs can find their Academic Policies in Graduate and Professional Academic Standards and Regulations (https://catalog.luc.edu/academic-standards-regulations/graduate-professional/) under their school. Any additional University Policies supersede school policies.

Learning Outcomes

Upon completion of our MS program in Applied Statistics, students are expected to have:

- Mastered the art and science of choosing and/or developing the appropriate statistical model(s) for a given dataset-situation, and have mastered the skill of interpreting the chosen model.
- Received sufficient exposure to basic theorems and proofs used in introductory probability and statistical inference.
- Worked with data from application fields such as public/global health, medical, industrial and environmental research.
- Received training to ethically apply statistical training in the real world.
- Obtained hands-on experience and assimilated course material via our 2cr Statistical Consulting capstone/practicum class.
- Sufficiently mastered the course and practicum material to either obtain gainful employment in the field of attend a Ph.D. program