NAME		Z#	

BS Major: Mathematics

The B.S. degree program in Mathematics consists of four concentrations:
Mathematical Biology; Mathematical Cryptology; Pure Mathematics; Statistics and Data Science
To complete the B.S. degree program, students will take specific courses for one of the four concentrations.

Mathematical Biology Concentration

CHECK when complete	*Course Title*	*FAU*	*Credits*	*Sub.*	*Inst.*	*Advisor Approval*
	Biological Principles	BSC 1010	3			
	Biodiversity	BSC 1011	3			
	General Chemistry 1	CHM 2045	3			
	General Chemistry 2	CHM 2046	3			
	Methods of Calculus **or**	MAC 2233	3			
	Life Science Calculus 1 **or**	MAC 2241	3			
	Calculus with Analytic Geometry 1	MAC 2311	4			
	Mathematics for Biological Sciences 1	MAP 2491	3			
	Mathematics for Biological Sciences 2	MAP 2492	3			
	Discrete Mathematics	MAD 2104	3			
	Intro to Computational Math	MAD 2502	3			
	Introductory Statistics	STA 2023	3			
	Applied Machine Learning and Data Mining	CAP 4612	3			
	Artificial Intelligence Applications in Biology	IDS 4139	3			
	Applied Mathematical Modeling	MAP 4103	3			
	Genetics **or**	PCB 3063	4			
	Principles of Ecology	PCB 4043	3			
	Introduction to Biostatistics	STA 3173	3			

Choose two upper-division science electives with BCH, BOT, BSC, CHM, IDS, MCB, OCB, PCB, PHY, PHZ, ZOO prefixes (minimum 6 credits)

Choose one Research-Intensive elective:

	RI: Introduction to Data Science	CAP 3786	3			
	RI: Industrial Problems in Applied Math	MAP 4913	3			
	RI: Neurophysiology	PCB 4832C	3			
	RI: Neurobiology of Learning and Memory	PSB 4810	3			
	RI: Statistical Learning	STA 4241	3			

Note: Required Minimum GPA 2.5
Note: For this concentration, MAP 2492 can be replaced by the combination of the three courses MAC 2312 and MAP 2302 and MAS 2103.
Concentration Total (including Science) 59-60 credits. 45 credits of Upper Division coursework is required (24-25cr UD in major, 20-21cr UD general electives)

Mathematical Cryptology Concentration

CHECK when complete	*Course Title*	*FAU*	*Credits*	*Sub.*	*Inst.*	*Advisor Approval*
	Calculus w/ Analytic Geometry 1	MAC 2311	4			
	Calculus w/ Analytic Geometry 2	MAC 2312	4			
	Calculus w/ Analytic Geometry 3	MAC 2313	4			
	General Chemistry 1 / Lab **or**	CHM 2045/L	4			
	General Physics 1 / Lab	PHY 2048/L	5			
	Programming 1	COP 2220	3			
	Discrete Mathematics	MAD 2104	3			
	Matrix Theory or Linear Algebra	MAS 2103	3			
	Cryptography and Information Security	CIS 4362	3			
	Programming 2	COP 3014	3			
	Data Structures and Algorithm Analysis	COP 3530	3			
	Introductory Number Theory	MAS 3203	3			
	Modern Algebra	MAS 4301	3			
	Introduction to Advanced Mathematics	MHF 3202	3			
	Probability and Statistics 1	STA 4442	3			
Choose two upper-division Science electives (minimum 6 credits):						
	Numerical Methods	MAD 3400	3			
	Graph Theory	MAD 4301	3			
	Numerical Analysis 1	MAD 4401	3			
	Post-Quantum Cryptography	MAD 4475	3			
	Cryptography of Blockchain	MAD 4476	3			
	Introduction to Coding Theory	MAD 4605	3			
	Engineering Mathematics 1	MAP 3305	3			
	Intro to Methods in Complex Systems	MAP 4112	3			
	Mathematics of Cybersecurity	MAP 4190	3			

	Vector Calculus	MAS 3156	3			
	Linear Algebra 2	MAS 4107	3			
	Mathematics for Cryptography	MAS 4206	3			
	Topology for Data Science	MTG 4325	3			
	Computational Statistics	STA 3100	3			
Choose three upper-division Electrical Engineering & Computer Science electives (minimum 9 credits):						
	Applied Machine Learning & Data Mining	CAP 4612	3			
	Introduction to Deep Learning	CAP 4613	3			
	Introduction to Artificial Intelligence	CAP 4630	3			
	Intro to Data Mining & Machine Learning	CAP 4770	3			
	Intro to Cryptographic Engineering	CDA 4321	3			
	Applied Cryptography and Security	CIS 4634	3			
	Network and Data Security	CNT 4411	3			
	Introduction to Database Structure	COP 3540	3			
	Python Programming	COP 4045	3			
	Computer Operating Systems	COP 4610	3			
	Design and Analysis of Algorithms	COT 4400	3			
	Theory of Computation	COT 4420	3			
Concentration Total (excluding Science) 57 credits. 45 credits of Upper Division coursework is required (36cr UD in major, 9cr UD general electives)						

Pure Mathematics Concentration

CHECK when complete	***Course Title***	***FAU***	***Credits***	***Sub.***	***Inst.***	***Advisor Approval***
	Calculus w/ Analytic Geometry 1	MAC 2311	4			
	Calculus w/ Analytic Geometry 2	MAC 2312	4			
	Calculus w/ Analytic Geometry 3	MAC 2313	4			
	General Chemistry 1 / Lab **or**	CHM 2045/L	4			
	General Physics 1 / Lab	PHY 2048/L	5			
	Discrete Mathematics	MAD 2104	3			
	Intro to Computational Math	MAD 2502	3			
	Differential Equations 1	MAP 2302	3			

	Matrix Theory or Linear Algebra	MAS 2103	3			
	Introductory Complex Analysis	MAA 4402	3			
	Introductory Analysis 1	MAA 4226	3			
	Introduction to Advanced Mathematics	MHF 3202	3			
	Linear Algebra 2	MAS 4107	3			
	Vector Calculus	MAS 3156	3			
	Modern Algebra	MAS 4301	3			
	Introductory Abstract Algebra 1	MAS 4304	3			
	Probability and Statistics 1	STA 4442	3			
Upper-division Math electives (minimum 9 credits):						
Concentration Total (excluding Science) 57 credits. 45 credits of Upper Division coursework is required (33cr UD in major, 12cr UD general electives)						

Statistics and Data Science Concentration

CHECK when complete	*Course Title*	*FAU*	*Credits*	*Sub.*	*Inst.*	*Advisor Approval*
	Calculus w/ Analytic Geometry 1	MAC 2311	4			
	Calculus w/ Analytic Geometry 2	MAC 2312	4			
	Calculus w/ Analytic Geometry 3	MAC 2313	4			
	General Chemistry 1 / Lab **or**	CHM 2045/L	4			
	General Physics 1 / Lab	PHY 2048/L	5			
	Programming 1	COP 2220	3			
	Discrete Mathematics	MAD 2104	3			
	Matrix Theory or Linear Algebra	MAS 2103	3			
	Intro to Computational Mathematics	MAD 2502	3			
	Programming 2	COP 3014	3			
	Data Structures and Algorithm Analysis	COP 3530	3			
	Introduction to Complex Analysis	MAA 4402	3			
	Modern Algebra	MAS 4301	3			
	Introduction to Advanced Mathematics	MHF 3202	3			
	Applied Statistics 1	STA 4234	2			
	Applied Statistics 1 Lab	STA 4202L	1			
	Probability and Statistics 1	STA 4442	3			

Choose two upper-division Math electives (minimum 6 credits):						
Choose two of the Concentration Electives:						
	RI: Introduction to Data Science	CAP 3786	3			
	Introduction to Deep Learning	CAP 4613	3			
	Intro to Data Mining & Machine Learning	CAP 4770	3			
	Intro to Data Science & Analytics	CAP 4773	3			
	Theory of Computation	COT 4420	3			
	Applied Mathematical Modeling	MAP 4103	3			
	Intro to Methods in Complex Systems	MAP 4112	3			
	RI: Industrial Problems in Applied Math	MAP 4913	3			
	Topology for Data Science	MTG 4325	3			
	Computational Statistics	STA 3100	3			
	RI: Statistical Learning	STA 4241	3			
	Applied Time Series & Forecasting	STA 4853	3			
Concentration Total (excluding Science) 57 credits. 45 credits of Upper Division coursework is required (33cr UD in major, 12cr UD general electives)						