DEGREE PLANS FOR MATHEMATICS

EMPHASES: GENERAL, ACTUARIAL SCIENCE & INSURANCE, APPLIED MATHEMATICS

Students earning a B.S. in Mathematics can choose from three emphases:

***General Emphasis*:** Students seeking a foundation in pure mathematics and flexibility in the curriculum are encouraged to pursue the General Emphasis. This emphasis is well suited for students preparing for either a career or graduate work in mathematics.

***Actuarial Science and Insurance Emphasis**:* This emphasis draws on courses from mathematics and business to prepare students for a mathematical career in insurance. The coursework in this emphasis focuses on the analysis of risk and its applications to insurance and finance. Students fulfilling the requirements for this emphasis earn a minor in Insurance.

***Applied Mathematics Emphasis*:** This emphasis is intended to prepare students planning a mathematically oriented career upon graduation. The coursework in this emphasis provides a foundation in mathematics important in many scientific and engineering applications.

Students planning to enter a graduate program in Mathematics should select the General Emphasis. In any case, such students are strongly advised to take both MATH 331 Introduction to Modern Algebra and MATH 332 Introduction to Analysis, since these courses are required by most programs, and should take as many as possible of the following courses: MATH 481 Advanced Linear Algebra, MATH 491 Introduction to Real Analysis I and MATH 492 Introduction to Real Analysis II.

Core Departmental Requirements: All three emphases require ***MATH 191G*** Calculus and Analytic Geometry I; ***MATH 192G*** Calculus and Analytic Geometry II; ***MATH 291G*** Calculus and Analytic Geometry III; ***MATH 279*** Introduction to Higher Mathematics; ***MATH 280*** Introduction to Linear Algebra.

General Emphasis

Required: ***MATH 331*** Introduction to Modern Algebra; ***MATH 332*** Introduction to Analysis

Departmental Electives (***18 hours***): At least 18 additional upper-division credits of approved courses prefixed **MATH** or **STAT** excluding **MATH 313**, **316**, **400**, **459**, and **STAT 400**. **MATH 401** must be approved by the department for credit towards the major. At least 12 of the **MATH** and **STAT** credits must be numbered higher than 400.

Nondepartmental Requirements: ***CS 172*** Computer Science I; ***CS 272*** Introduction to Data Structures; two years of foreign language or equivalent (see catalog).

Actuarial Science and Insurance Emphasis

Required: ***MATH 331*** Introduction to Modern Algebra, ***or MATH 332***, Introduction to Analysis; ***STAT 371*** Statistics for Engineers and Scientists I; ***STAT 470*** Probability: Theory and Application; ***STAT 480*** Statistics: Theory and Applications.

Departmental Electives (***9 hours***): The Actuarial Science Emphasis requires also at least 9 additional upper-division credit hours of approved courses prefixed **MATH** or **STAT** excluding **MATH 313**, **316**, **400**, **459**, and **STAT 400**. **MATH 401** must be approved by the department for credit towards the major. At least 6 of the **MATH** and **STAT** credit hours must be numbered higher than 400.

Nondepartmental Requirements: ***ACCT 221*** Principles of Accounting I (Financial); ***ACCT 222*** Principles of Accounting II (Managerial); ***BLAW 316*** Legal Environment of Business OR ***BLAW 385V*** Consumers and the Law; ***CS 172*** Computer Science I; ***ECON 251G*** Principles of Macroeconomics; ***ECON 252G*** Principles of Microeconomics; ***FIN 322*** Principles of Insurance; select one from ***FIN 326*** Business Risk Management OR ***FIN 323*** Life/Health/Employee Benefits OR ***FIN 324*** Property and Liability Insurance; ***FIN 341*** Financial Analysis and Markets.

Insurance Electives (*Pick 2 of 4*): *FIN 303V* Personal Financial Planning and Investment in a Global Economy OR ***FIN 421*** Personal Financial Planning for Professionals; ***FIN 323*** Life/Health/Employee Benefits; ***FIN 324*** Property and Liability Insurance; ***FIN 391*** Finance Internship and Cooperative Education I.

Applied Mathematics Emphasis

Required: *STAT 371* Statistics for Engineers and Scientists I; ***MATH 377*** Introduction to Numerical Methods; ***MATH 392*** Introduction to Ordinary Differential Equations; ***STAT 470*** Probability: Theory and Application; ***MATH 471*** Complex Variables; ***MATH 472*** Fourier Series and Boundary Value Problems.

Departmental Electives (***6 hours***): The Applied Mathematics Emphasis requires at least 6 additional upper-division credit hours of approved courses prefixed **MATH** or **STAT** excluding **MATH 313**, **316**, **400**, **459**, and **STAT 400**. **MATH 401** must be approved by the department for credit towards the major. At least 3 of the **MATH** and **STAT** credit hours must be numbered higher than 400.

Nondepartmental Requirements: Majors choosing an Applied Mathematics Emphasis must select a minimum of ***12 credit hours of elective courses to form a coherent cluster in an applied area***. Students may propose clusters subject to departmental approval. Examples of acceptable clusters are given below. A cluster must contain **C S 172**. A major or minor in any of the following fields (along with **C S 172**) will also fulfill the Cluster Electives requirement: Computer Science, Physics, Biology, Chemistry and Biochemistry, Chemical Engineering, Engineering Physics, Electrical and Computer Engineering, Industrial Engineering, Mechanical Engineering, Civil Engineering, Economics, Finance.

Examples of acceptable clusters:

Signals: minimum of 9 hours chosen from E E 230; E E 320; E E 395; E E 496

Structures: minimum of 9 hours chosen from PHYS 215G; C E 233; C E 301; C E 315

Operations Research: minimum of 9 hours chosen from I E 311; I E 365; I E 413; I E 423; I E 460

Algorithm theory: C S 272; C S 370; C S 372

Bioinformatics: BIOL 211G and 211GL; C S 486; and a minimum of 6 hours chosen from C S 272; C S 370, C S 371; C S 372.

Computer Systems: minimum of 9 hours chosen from C S 271 or C S 272; C S 370; C S 371; C S 474; C S 475; C S 476, C S 482; C S 484; C S 485

Questions? Contact Dr. Dante DeBlassie, deblass@nmsu.edu

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