

MINOR: Spanish

A student whose primary language for a B.A. in Foreign Languages is Spanish may not also earn a minor in Spanish. Students must pass at least 18 credits of which at least 12 credits are upper division. Students may not count SPAN 364G or SPAN 365G because they are taught in English.

SPAN 312, Grammar for Native Speakers of Spanish, or SPAN 313, Spanish Grammar.....	3
SPAN 314, Spanish Composition or SPAN 315, Issues in the Hispanic World.....	3
The remaining 12 credits are electives, at least 6 of which must be taken at the 300 or 400 level. However, up to 6 of the 12 elective credits may be counted from courses passed at the 200 level.....	12

MATHEMATICAL SCIENCES

Professor Ross E. Staffeldt, department head

Professors Alvarez, Baggett, Finston, Gehrke, Harding, Kurtz, Lampert, Lodder, Morandi, Nguyen, Pengelley, Sallach; **Associate Professors** Barany, Cohen, Engebos, Gasparim, Geiger, Krupa, Lakey, Olberding, Salamanca-Riba, Stanford, Sweezy, Wang; **Assistant Professors** Allison, Ballyk, Beck, Bezhanihvili, Funke, Giorgi, Hill, Mariani, Mostafa, Schibel, Sikora, Smits, Zimmerman
(505) 646-3901

DEGREE: Bachelor of Science
MAJOR: Mathematics
SUPPLEMENTARY MAJOR: Applied Mathematics

MINOR: Mathematics

Mathematics is of fundamental importance in all phases of society and is also a rewarding profession with a wide variety of opportunities for employment. This department offers programs leading to a major or minor in mathematics. Note that courses in this department are listed as "Mathematics" (MATH) or as "Statistics" (STAT).

DEGREE: Bachelor of Science
MAJOR: Mathematics

Departmental Requirements for the Major

- (a) MATH 191, 192, 291, 279, 280, 331, and 332 (or equivalent courses).
(b) At least 18 additional upper-division credits of approved courses prefixed MATH or STAT, excluding MATH 300, 308, 312, 313, 314, 400, 459, and STAT 400. Any special topics course MATH or STAT 301 and MATH or STAT 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 Requirement for the Major (A grade of C or better must be earned.)

- (a) C S 171 and C S 272.
(b) Electives sufficient to meet college and university requirements for general education, total credits, and total upper-division credits.

Suggested Program of Study for Mathematics Majors**First Year (31-36 credits)**

MATH 191-192, Calculus/Analytic Geometry I, II.....	6
MATH 279, Introduction to Finite Mathematics.....	3
C S 171, Algorithmic Computation.....	4
ENGL 111G, Rhetoric and Composition.....	4
Foreign Language 111-112.....	8
General Education Courses.....	6-11

Second Year (31-37 credits)

MATH 280, Introduction to Linear Algebra.....	3
MATH 291, Calculus/Analytic Geometry III.....	3
MATH 331, Introduction to Modern Algebra.....	3
C S 272, Introduction to Data Structures.....	4
ENGL 218G, Technical and Scientific Communication.....	3
Foreign Language 211-212.....	6
General Education Courses.....	6-9

Electives in Mathematics, Statistics, or Related Area(s)..... 3-6

Third and Fourth Years

The mathematics major should work out with an advisor a program for the third and fourth years that includes:

1. Completion of the College of Arts and Sciences and university general education requirements and upper-division requirements.
2. Seven to nine additional upper-division courses in mathematics and statistics, including MATH 332 and at least four courses at the 400 level.
3. Elective courses in the student's area(s) of interest.

NOTES:

Some students may be able to bypass one or more courses in the calculus sequence 191-192-291. The calculus sequence, finite mathematics, and linear algebra provide knowledge that is basic to further work, and students are advised to complete them or their equivalent as early as possible.

It is strongly recommended that mathematics majors consider a minor or second major in an area that uses mathematics, such as physics or computer science. All programs should be planned with the guidance of a departmental advisor. A short brochure containing further suggestions is available from the Department of Mathematical Sciences.

Students planning to do graduate work in mathematics should take French or German to meet the requirement of a second language and should take as many as possible of the courses MATH 481, 482, 491, 492.

SUPPLEMENTARY MAJOR: Applied Mathematics

The program consists of 24 credits in the designated list of courses. To earn a supplementary major in applied mathematics a student must earn 15 credits from Categories I.A and I.B of which at least 9 credits must be from Category I.B. A student must also earn 9 credits from the Category II list of related disciplines. The courses in Category II may be taken from any combination of areas.

Category I.A.— choose at most 6 credits 6
MATH 377, Introduction to Numerical Methods; MATH 391, Vector Analysis; MATH 392, Ordinary Differential Equations; STAT 371, Statistics for Engineers and Scientists I

Category I.B.— choose at least 9 credits 9
MATH 331, Introduction to Modern Algebra; MATH 332, Introduction to Analysis; MATH 430, Combinatorial Mathematics; MATH 431, Algebraic Coding Theory; MATH 451, Introduction to Differential Geometry; MATH 453, Introduction to Topology; MATH 454, Mathematical Logic; MATH 471, Complex Variables; MATH 472, Fourier Series and Boundary Value Problems; MATH 473, Calculus of Variations and Optimal Control; MATH 480, Vector Spaces and Matrix Algebra; STAT 470, Probability-Theory and Application; STAT 480, Statistics-Theory and Applications

Category II— related disciplines, choose any 9 credits 9
C E 315, Structural Analysis I; C E 331, Hydraulic Engineering; C E 356, Fundamentals of Environmental Engineering; C E 382, Hydraulic Systems Design
CH E 305, Transport Operations I: Fluid Flow; CH E 412, Process Dynamics and Control; CH E 441, Chemical Kinetics and Reactor Engineering
C S 372, Data Structures and Algorithms; C S 476, Computer Graphics I; CS 486, Bioinformatics; CS 491, Parallel Programming; CS 492, Modeling and Simulation. For the next two courses, the student must be eligible to take 500-level courses: C S 510, Automata, Languages, Computability, and CS 570, Analysis of Algorithms

ECON 405, Economic Statistics; ECON 457, Mathematical Economics; ECON 498, Independent Study (with approval)

E E 395, Introduction to Digital Signal Processing; E E 470, Optics II; E E 475, Control Systems II; EE 476, Computer Control Systems; E E 496, Introduction to Communication Systems I; E E 497, Introduction to Communications Systems II

I E 365, Quality Control; I E 413, Engineering Operations Research I; IE 415, Stochastic Processes Modeling; I E 423, Engineering Operations Research II; I E 460, Evaluation of Engineering Data; IE 466, Reliability

M E 332, Vibrations; M E 333, Intermediate Dynamics; M E 338, Fluid Mechanics; M E 341, Heat Transfer; M E 463, Low Speed Aerodynamics; M E 473, Compressible Flow

PHYS 451, Intermediate Mechanics I; PHYS 454, Intermediate Modern Physics I; PHYS 455, Intermediate Modern Physics II; PHYS 461, Intermediate Electricity and Magnetism I; PHYS 462, Intermediate Electricity and Magnetism II; PHYS 470, Optics II; PHYS 476, Computational Physics

SUR 351, Introductory Survey, Measurements, Analysis and Adjustments; SUR 451, Advanced Survey Measurements, Analysis and Adjustments; SUR 462, Advanced Geodesy

MINOR: Mathematics

A student must pass 18 or more credit hours in MATH and STAT courses, with at least 9 of the credits in upper division courses and 3 or those 9 credits in courses numbered above 400. The following courses are excluded from the minor: courses numbered below 125, MATH 200, MATH 300, MATH 308, MATH 312, MATH 313, MATH 314, MATH 400, MATH 459, and STAT 400. At most, one of STAT 251, STAT 271, or STAT 371 may be included in a minor. Any special topics courses, MATH or STAT 301 and MATH or STAT 401, must be approved by the department for credit toward the minor. Any course taught outside the Department of Mathematical Sciences but cross-listed with a MATH or STAT course, must also be approved by the department for credit toward the minor. A student may not earn a bachelor's degree in mathematics or a supplementary major in applied mathematics and also earn a minor in mathematics.

MILITARY SCIENCE

Lieutenant Colonel Bradley D. Gavle, department head

Assistant Professors Major Nakamoto, Captain Hugo, Sergeant First Class Perry (505) 646-4030

The Military Science program leads to a commission as an officer in the Army Reserve, National Guard, or Active Duty Army. The program consists of four parts: the student's academic major, nondepartmental courses of value to the military service, courses in military science, and a six-week Leader Development and Assessment course. The department offers a four-year program divided into two parts: the basic course (two years) and the advanced course (two years). Selected students may qualify for the two-year program with prior military service or successful completion of a six-week summer Leaders' Training course. Financial assistance and scholarships are available for qualified individuals. Students should contact the Department of Military Science to obtain additional information.

Requirements for Minor in Military Science

The minor in Military Science is administered by the Department of Military Science (Army ROTC) in the College of Arts and Sciences. To obtain a minor in Military Science a student must complete a total of 19 credits, all of which must be upper division. A grade of C or better must be obtained for each course. The only credits in which a grade of S will be accepted is MSC 350. Students should contact the Department of Military Science to obtain additional information.

MILITARY SCIENCE PROGRAM

Basic Course—Freshman

M SC 110, Introduction to Military Science.....	2
M SC 111, Introduction to Leadership.....	2

Basic Course—Sophomore

M SC 210, Self/Team Development.....	3
M SC 211, Leadership in Action and Team Building.....	3
M SC 225, Directed Studies.....	1-3
M SC 250, Leadership Internship I (summer only).....	4

Courses should be taken in sequence, normally one per semester.

Advanced Course—Junior

M SC 310, 310L, Leading Small Organizations I/Lab.....	4
M SC 320, 320L, Leading Small Organizations II/Lab.....	4
M SC 325, Advanced Directed Studies.....	1-3
M SC 350, Leadership Internship (summer only).....	6

Advanced Course—Senior

M SC 401, 401L, Leadership Challenges and Goal Setting/Lab.....	4
M SC 402, 402L, Transition to Lieutenant/Lab.....	4
M SC 425, Practicum.....	1-4

The student's military science advisor will recommend course sequence. Military science students must sign up for and attend courses plus laboratories. Departmental requirements may not be taken S/U.

NONDEPARTMENTAL REQUIREMENTS

One course in Military History must be successfully completed to meet Professional Military Education requirements. See your military science advisor for specific courses.

MUSIC

Associate Professor Gregory Fant, department head

Professors Alt, Borchert, Klein, Shearer, Sylvan, K. Van Winkle; Associate Professors Kaplan, Romero, Rowe, Spitzer, Staehle; Assistant Professors Bugbee, Christiansen, Joy, Stovall, L. Van Winkle (505) 646-2421

DEGREE: Bachelor of Music Education
OPTIONS: K-12, Vocal
K-12, Instrumental

DEGREE: Bachelor of Music
OPTIONS: Piano Performance
Instrumental Performance
Vocal Performance
Business

MINOR: Music

Mission Statement

The mission of the Music Department at NMSU is: 1) to prepare our students for careers in music education, business, and/or performance; 2) to give the student body opportunities to perform, study, create, and experience music; 3) to enhance the cultural lives of our constituency by performance of superior music; and 4) to create an artistic environment which fosters the development of personal realizations we believe to be essential to the fabric of a healthy society.

Departmental Requirements for all Bachelor's Degrees (Music Core)

A student must earn a grade of C or better in all departmental requirements for any degree in the Department of Music. All students wishing to pursue a music degree must audition and take the theory placement exam. Contact the department for current audition requirements.

Students enrolled in this department's major(s) or minor(s) may count credits in required applied courses toward their degrees beyond the normal maximum of 9 credits allowed in the College of Arts and Sciences. However, if students change the major(s) or minor(s) or do not complete the requirements for the minor at the time of graduation, they may only count a maximum of 9 credits of the applied/occupational credits toward graduation.

DEGREE: Bachelor of Music Education
OPTIONS: K-12, Instrumental
K-12, Vocal

The Bachelor of Music Education (B.M.E.) is a diversified four- to five- year degree program of teaching, performance, and specialized studies in music. The goal of this degree is to prepare the student for certification to teach music in the public schools, and serves as a foundation for advanced study toward master's and doctoral degrees: M.M., M.M.E., D.M.A., or Ph.D in music education.

REQUIREMENTS K-12 – Instrumental

Basic Music and Performance

MUS 141, Class Voice.....	2
MUS 202, Introduction to Music Literature.....	3
MUS 211/212, Ear Training I/II.....	2
MUS 213/214, Music Theory I/II.....	6
MUS 273, Music Technology.....	3
MUS 302, History and Literature of Music to 1750.....	3
MUS 303, History and Literature of Music After 1750.....	3
MUS 311/312, Ear Training III/IV.....	2
MUS 313/314 Music Theory III/IV.....	6
MUS 325, Beginning Conducting.....	1
MUS 326, Instrumental Conducting.....	3
MUS 230, 330, 430, Applied Music (instrumental).....	14
MUS 315/316, Brass Technique I/II.....	2