

Singers is required each semester an award is made. For a music scholarship, applied music study and one or more of the following are required of all recipients: participation in one of the music ensembles, as accompanist or recital appearances. Students must have a 2.0 grade-point average to retain a band grant, and a 2.5 grade-point average to retain a music scholarship; music scholarship students must have a 3.0 grade point average in their applied music study. Other foundation scholarships may require different GPAs.

For information on orchestra scholarships, band grants, and other music scholarships and awards, write to Music Department Head, Department of Music, MSC 3F, NMSU, P O Box 30001, Las Cruces, New Mexico 88003-8001 or email music@nmsu.edu.

PHILOSOPHY

Associate Professor Timothy Cleveland, department head

Associate Professor Scoccia; *Assistant Professors* Thorsrud, Vessel (505) 646-4616; 646-2358 (fax)

DEGREE: Bachelor of Arts
MAJOR: Philosophy

MINORS: Ethics
Philosophy

A major in philosophy serves not only as preparation for further graduate study in philosophy but also as an area of concentration in a liberal arts program. A philosophy major is appropriate for students planning to attend medical school as well as for those students interested in a career which requires critical reading and argument analysis. Such careers include business, theology and above all, law.

While the course requirements for the major should meet the ends of the liberal arts student, those students interested in graduate study in philosophy or in a career in law are encouraged to seek advice from a faculty advisor as early in their career as possible.

A minor program in philosophy requiring 18 hours of course work is also offered. Information on specific requirements is available in the department office. For more information visit the Department of Philosophy's web page at www.nmsu.edu/~philos/.

DEGREE: Bachelor of Arts
MAJOR: Philosophy

Departmental Requirements

PHIL 201G, Introduction to Philosophy, or PHIL 101G, The Art of Wondering...3
PHIL 312, Formal Logic3
PHIL 341, Ancient Philosophy, or PHIL 344, Modern Philosophy.....3

Three credits in ethics from the following:

PHIL 320, Social and Political Philosophy; PHIL 373, Ethical Theory; PHIL 376, Philosophy of law.....3

Six credits from the following core:

PHIL 315, Philosophy of Language; PHIL 346, Philosophy of Mind; PHIL 350, Theories of Knowledge; PHIL 351, Philosophy of Science; PHIL 380, Nature of Reality6

At least 12 additional credits in philosophy, 6 of which are courses numbered 300 or above.

Electives: Sufficient to bring total credits to 128, including 54 upper-division.

MINOR: Ethics

A student who earns a B.A. in Philosophy may not also earn a minor in Philosophy.

PHIL 101G, The Art of Wondering, or PHIL 201G, Introduction to Philosophy.....3
PHIL 211G, Informal Logic.....3
PHIL 373, Ethical Theory.....3

Three of the following courses, of which at least two must be upper division:

CJ 425, Issues in Ethics, Law and Criminal Justice; HON 225G, History of Ethics; HON 304G, Dilemmas of War and Peace; HON 306G, Science and

Ethics; JOUR 377, Mass Media Ethics; PHIL 220, Individual Conduct and Society; PHIL 240G, Ethics for Engineering and Scientific Careers; PHIL 302, Business Ethics; 321 Biomedical Ethics; PHIL 322, Environmental Ethics; PHIL 323, Engineering Ethics; PHIL 381, Human Nature and the Good Life; and SUR 401, Surveying Ethics. Students may earn up to 3 credits in this category from special topics or Honors courses approved by the head of the Department of Philosophy.....9

MINOR: Philosophy

A student who earns a B.A. in Philosophy may not also earn a minor in Philosophy.

PHIL 101G, The Art of Wondering, or PHIL 201G, Introduction to Philosophy.....3
PHIL 220, Individual Conduct and Society, or PHIL 223G, Ethics, or PHIL 373, Ethical Theory.....3
PHIL 211G, Informal Logic, or PHIL 312, Formal Logic3
Nine additional Philosophy credits at the 300 or above level.....9

PHYSICS

Professor Gary Kyle, department head

Professor Stephen Pate, undergraduate program head

Professor Matthias Burkhardt, graduate program head

Professors Armstrong, Burkhardt, Burleson (emeritus), Chen (emeritus), Daw (emeritus), Gibbs, Goedecke (emeritus), Ingraham (emeritus), Kyle, Kunz (emeritus), Liefeld (emeritus), Miller (emeritus), Ni; *Associate Professors* Hearn, Nakotte, Papavassiliou, Pate, Stromberg (emeritus); *Assistant Professors* Curran, Engelhardt, Kanim, Kiefer, Urquidí, Vasiliev (505) 646-3831

DEGREE: Bachelor of Arts
MAJOR: Physics

DEGREE: Bachelor of Science
MAJOR: Physics

EMPHASIS: Applied Physics
EMPHASIS: Applied Optics
EMPHASIS: Computational Physics
EMPHASIS: Geophysics

DEGREE: Bachelor of Science
MAJOR: Engineering Physics

DESIGNATED MINORS:

Physics/Classical Mechanics
Computational Physics
Physics/Electromagnetics
General Physics
Geophysics
Physics/Materials
Physics/Optics
Physics/Quantum Mechanics

A bachelor's degree in physics provides the basis for careers in industry, teaching, the military, government, or for study toward advanced degrees in physics or engineering. It should also provide the skills that recipients of physics degrees have listed as among the most important in obtaining their current positions, including problem solving ability, computer skills, mathematical skills, and laboratory skills, as well as knowledge of physics.

Further information about the department may be found on the web at www.physics.nmsu.edu.

DEGREE: Bachelor of Arts
MAJOR: Physics

The curriculum for the Bachelor of Arts degree is designed for students who would like to have a firm foundation in physics combined with study in another area

and greater flexibility in choosing elective courses. The program requires a minor in a second field of study chosen by the student in consultation with an advisor.

Nondepartment Requirements (May not be taken S/U and must earn a grade of C or better.)

MATH 191, 192, 291, Calculus and Analytic Geometry I, II, III; and MATH 392, Differential Equations

Minor in a second field from another department (18 credits)

Department Requirements

| | |
|-------------------------------------------------------------------------------------------|---|
| PHYS 150, Elementary Computational Physics..... | 3 |
| PHYS 213/213L, Mechanics, and Experimental Mechanics | 4 |
| PHYS 214/214L, Electricity and Magnetism, and Experimental Electricity and Magnetism..... | 4 |
| PHYS 217/217L, Heat, Light, and Sound, and Experimental Heat, Light, and Sound | 4 |
| PHYS 315 Modern Physics..... | 3 |
| PHYS 315L, Experimental Modern Physics..... | 2 |
| PHYS 451, Intermediate Mechanics..... | 3 |
| PHYS 454, Intermediate Modern Physics I..... | 3 |
| PHYS 455, Intermediate Modern Physics II..... | 3 |
| PHYS 461, Intermediate Electricity and Magnetism I | 3 |
| PHYS 462, Intermediate Electricity and Magnetism II..... | 3 |
| PHYS 480, Thermodynamics..... | 3 |

Electives: Sufficient to bring total number of credits to 128, including 54 upper-division.

Suggested Minors for the Bachelor of Arts Physics Major

Basic Science Minor—A minor in a related scientific field broadens the overall knowledge of the student majoring in physics. Some departments which offer such minors are astronomy, chemistry, computer science, geology, and mathematics.

Prehealth Minor—Students wishing to attend a medical or dental post-graduate school are strongly encouraged to obtain a minor in a life science field such as biochemistry, biology, human biology, microbiology, and molecular biology.

Prelaw Minor—Students wishing to attend a post-graduate law school should obtain a minor in a law-related field, such as government, accounting, finance, international business, global political economy, or a Supplementary Major in Law and Society (24 credits).

**DEGREE: Bachelor of Science
MAJOR: Physics**

A Bachelor of Science degree in physics at NMSU prepares a student well for graduate study in physics or geophysics, or for a variety of careers in research and teaching. Specialization in one of the emphasis areas should increase employability at the B.S. level.

Nondepartmental Requirements (Must earn a grade of C or better)

MATH 191, MATH 192, MATH 291, Calculus and Analytic Geometry I, II, III; MATH 392, Differential Equations.

CHEM 115, CHEM 116, Principles of Chemistry I, II, or higher-level courses.

Departmental Requirements

| | |
|-------------------------------------------------------------------------------------------|---|
| PHYS 150, Elementary Computational Physics..... | 3 |
| PHYS 213/213L, Mechanics, and Experimental Mechanics | 4 |
| PHYS 214/214L, Electricity and Magnetism, and Experimental Electricity and Magnetism..... | 4 |
| PHYS 217/217L, Heat, Light, and Sound, and Experimental Heat, Light, and Sound | 4 |
| PHYS 315 Modern Physics..... | 3 |
| PHYS 315L, Experimental Modern Physics..... | 2 |
| PHYS 451, Intermediate Mechanics..... | 3 |
| PHYS 454, Intermediate Modern Physics I..... | 3 |
| PHYS 455, Intermediate Modern Physics II..... | 3 |
| PHYS 461, Intermediate Electricity and Magnetism I | 3 |
| PHYS 462, Intermediate Electricity and Magnetism II..... | 3 |
| PHYS 480, Thermodynamics..... | 3 |
| Advanced laboratory (PHYS 471 or 475)..... | 2 |
| Six additional credits in physics or geophysics numbered 300 or above. | |

Electives: Sufficient to bring total number of credits to at least 128, including 54 upper-division.

Students who plan to pursue graduate study in physics or geophysics are strongly advised to take one or more senior-level courses in optics,

nuclear physics, atmospheric physics, condensed matter physics, geophysics, or computational physics.

Students who plan to seek employment at the B.S. level are advised to take one of the following emphasis area curricula in addition to the general and departmental requirements. The program of study should be chosen by the student in consultation with an advisor. Some recommended courses are listed below.

EMPHASIS: Applied Physics

The program of study in applied physics is planned by the student and the physics advisor and includes classes in electrical and mechanical engineering along with classes in computer science.

EMPHASIS: Optics

| | |
|------------------------------------------------------------|---|
| PHYS 370, Optics I..... | 3 |
| PHYS 470, Optics II..... | 3 |
| PHYS 471, Modern Experimental Optics | 2 |
| PHYS 478, Optical Sources, Detectors, and Radiometry | 4 |
| PHYS 479, Lasers and Applications..... | 4 |

EMPHASIS: Materials Science

| | |
|-------------------------------------------------------------------|---|
| CH E 361, Engineering Materials | 3 |
| CHEM 461, Polymers, their Composites and Mechanical Behavior..... | 3 |
| PHYS 475, Advanced Physics Laboratory..... | 2 |
| PHYS 488, Condensed Matter Physics..... | 3 |
| PHYS 489, Introduction to Modern Materials | 3 |

EMPHASIS: Computational Physics

| | |
|---------------------------------------------------------------|---|
| C S 157, FORTRAN Programming, or C S 167, C Programming | 3 |
| C S 171, Algorithmic Computations..... | 4 |
| MATH 279, Introduction to Finite Mathematics..... | 3 |
| PHYS 476, Computational Physics | 4 |

EMPHASIS: Geophysics

| | |
|--------------------------------------------|---|
| GEOL 111G, Survey of Geology | 4 |
| GPHY 330, Introduction to Geophysics | 3 |
| GPHY 451, Principles of Geophysics..... | 3 |
| GPHY 452, Exploration Geophysics..... | 3 |

Students desiring to prepare to be high school physics teachers will find the specific requirements listed under the College of Education chapter. Geophysics courses are offered by the Department of Physics and are listed under "Geophysics" in the course description chapter of this catalog.

**DEGREE: Bachelor of Science in Engineering Physics
MAJOR: Physics**

The Bachelor of Science in Engineering Physics is a joint degree program of the Department of Physics and the College of Engineering. This degree is ideal preparation for technical careers in high-tech industries, research laboratories, and the public sector. It also provides an excellent preparation for graduate studies in physics or engineering. A full description of the program requirements can be found in the College of Engineering section of this catalog.

MINOR: Physics

A student cannot earn a B.A. or a B.S. in Physics and a minor in Physics.

| | |
|------------------------------------------------------------------------------|---|
| PHYS 213, Mechanics, or PHYS 215, Engineering Physics I..... | 3 |
| PHYS 214, Electricity and Magnetism, or PHYS 216, Engineering Physics II...3 | |
| PHYS 217, Heat, Light and Sound..... | 3 |
| PHYS 315, Modern Physics..... | 3 |

Six additional Physics credits, not including PHYS 350, Special Topics; PHYS 400, Undergraduate Research, PHYS 450, Selected Topics; or any Physics General Education courses.....6

Designated Minors

In addition to the regular minor, the department offers several special designated minors, listed under "Academic Majors and Minors" in the "General Information" chapter. Any of these, together with an appropriate degree in another field, should give the student a background that is adequate to pursue graduate study in physics, along with the skills that physics bachelor's degree recipients have rated as among the most important in obtaining their current positions. Further information may be obtained from the department or its web page at www.physics.nmsu.edu.

A student cannot earn a B.A. or B.S. in Physics and any designated minor. To earn a designated minor, students must pass:

PHYS 213, Mechanics, or PHYS 215, Engineering Physics I.....3
 PHYS 214, Electricity and Magnetism, or PHYS 216, Engineering Physics II...3
 PHYS 217, Heat, Light and Sound3
 PHYS 315, Modern Physics.....3
 Six credits as listed below for each designated minor6

Classical Mechanics: PHYS 451, Intermediate Mechanics I, and PHYS 480, Thermodynamics

Computational Physics: PHYS 476, Computational Physics, and PHYS 495, Mathematical Methods of Physics I

Electromagnetism: PHYS 461, Intermediate Electricity and Magnetism I, and PHYS 462, Intermediate Electricity and Magnetism II

Materials: PHYS 488, Condensed Matter Physics; and PHYS 489, Introduction to Modern Materials

Optics: PHYS 370, Optics I, and PHYS 470, Optics II

Quantum Mechanics: PHYS 454, Intermediate Modern Physics I, and PHYS 455, Intermediate Modern Physics II

PSYCHOLOGY

Professor Douglas J. Gillan, department head

Professors Gregory, Thompson, Trafimow; *Associate Professors* Foltz, Lee, McDonald; *Assistant Professors* , Guynn, Ketelaar, Kroger, Madson, Simon; *Adjunct Professors* Cooke, Paap, *Emeriti* Johnston, Stephan
Adjunct Assistant Professor Abalakina
 (505) 646-2502

DEGREE: Bachelor of Arts
MAJOR: Psychology

MINOR: Psychology

Students may take a major in psychology either as an area of emphasis in a liberal arts program or in preparation for further graduate education leading to professional careers in psychology. A major in psychology may be appropriate for the liberal arts student who wishes to pursue a career involving extensive social interaction and requiring solutions to people-related problems. Such careers include law, business, parenting, government, education, and management. Professional careers in psychology generally require some postbaccalaureate education. These careers include provision of clinical and counseling services, conducting research, applying research findings in industrial or government settings, and doing teaching and research in colleges and universities. Students planning to apply to graduate school are encouraged to take PSY 311, Advanced Research Seminar, no later than the Fall semester of their senior year.

The requirements listed below should provide an adequate exposure to psychology for the liberal arts student and a basic foundation for students seeking a career in psychology. While all majors should consult with the department's advising center and with a faculty advisor, students wishing to prepare for a professional career in psychology are especially encouraged to work closely with an advisor, as early as possible. The advising center maintains several model programs that help prepare majors to fulfill various career goals.

DEGREE: Bachelor of Arts
MAJOR: Psychology

General Requirements

Students must receive a C or better in courses used to satisfy the departmental and nondepartmental requirements of the psychology major.

Departmental Requirements

PSY 201G, Introduction to Psychology, or
 HON 203G, Understanding the Science of Human Behavior3

Three credits from the following core: PSY 212, Abnormal Psychology; PSY 350, Developmental Psychology: Conception through Childhood; PSY 440, History and Systems.....3

Eight credits in research methods: PSY 310, Experimental Methods I; and PSY 311, Experimental Methods II, or PSY 453, Developmental Research Methods.....8

The following requirements are to be met after the student has completed PSY 310:

At least 3 credits in Basic Mechanisms from the following:
 PSY 301, Introduction to Psycholinguistics; PSY 375, Introduction to Biopsychology; PSY 376, Evolutionary Psychology; PSY 380, Perception3-4

At least 3 credits in Acquisition and Use of Knowledge from the following:
 PSY 320, Learning; PSY 340, Cognitive Psychology; PSY 383, Memory; PSY 442, Thinking.....3-4

At least 3 credits in Understanding Behavior from the following:
 PSY 315, Emotion and Motivation; PSY 217, Social Psychology; PSY 321, Personality; PSY 358, Individual and Group differences3

Additional electives to bring total credits in psychology to at least 34, with at least 24 credits being upper division.

Nondepartmental Requirements

Three credits in quantitative methods from the following:

STAT 271, Statistics for Psychological Science is recommended; STAT 251, Statistics for Business and Behavioral Sciences, or E ST 311G, Statistical Applications are acceptable3

Three credits from any Philosophy course 300-level or above.....3

At least three credits of introductory biology. A course that includes a laboratory is highly recommended:

BIOL 101G, Human Biology, and BIOL 101L, Human Biology Laboratory, or BIOL 111G, Natural History of Life, and BIOL 111L, Natural History of Life Laboratory.....3-4

BIOL 211G and 211L are also recommended (Prerequisite: Chem 110G or CHEM 111)

MINOR: Psychology

A student must pass at least 18 credits in Psychology courses with grades of C or higher, and at least 9 of those credits must be upper division. A student may not earn both a B.A. in Psychology and a minor in Psychology.

SOCIOLOGY and ANTHROPOLOGY

Professor Brenda R. Benefit, department head

Professors Benefit, Rushforth, Staski, Trevathan, Williams; *Associate Professors* Alexander, Eber, Frehill, Lucero, Stanford, Walker; *Assistant Professors* McCrossin, Newby, Way; *College Associate Professor* O'Leary; *College Assistant Professors* Hamilton, Hoffman; *Adjunct Professors* Boaz, Loendorf, Long; *Adjunct Associate Professor* Hendricks; *Adjunct Assistant Professors* Lamb, Valverde
 (505) 646-3821

DEGREE: Bachelor of Arts
MAJOR: Sociology
MAJOR: Anthropology

MINORS: American Indian Studies
Anthropology
Religious Studies
Sociology

MAJOR: Sociology

The undergraduate major in sociology is broad in scope. It prepares the student for a great variety of public and private sector employment opportunities including market research, personnel, corrections, and health services. Successful students often use their major as preprofessional preparation for