C E 382, Hydraulic Systems Design and C E 483, Surface Water Hydrology . 6
A EN 459, Design of Water Wells/Pumping Systems or G EN 452, Geohydrology 3
A EN 475, Soil and Water Conservation; A EN 478, Irrigation and Drainage Engineering; A EN 479, Irrigation Systems Design and Management; or ENVE 456, Environmental Engineering Design..... 6

Electives for Geotechnical Option (18 credits):
G EN 452, Geohydrology; G EN 457, Foundation Design; G EN 459, Geomechanics and Rock Engineering; and G EN 485, Earthen Dam Design..... 12
G EN 453, G EN 498, C E 471, Highway Engineering or C E 482, Hydraulic Structures..... 6

Electives for General Civil Engineering Option (18 credits):
ENVE 456, Environmental Engineering Design; C E 469, Structural Systems, C E 482, Hydraulic Structures; or C E 485, Design of Earth Dams 3
C E 382, Hydraulic Systems Design; C E 444, Elements of Steel Design; C E 445, Reinforced Concrete Design; ENVE 455, Solid and Hazardous Waster Systems Design; or C E 457, Foundation Design 9
C E 471, Highway Engineering; C E 477, Construction Engineering; A EN 459, Design of Water Wells/Pumping Systems; G EN 452, Geohydrology; C E 483, Surface Water Hydrology; A EN 475, Soil and Water Conservation; A EN 478, Irrigation and Drainage Engineering; or A EN 479, Irrigation Systems Design and Management 6

MINOR: Agricultural Engineering

Minimum of 18 credits, designated as follows:
College of Agriculture and Home Economics
Soil Science Requirements, 3 credits from: SOIL 472, Soil morphology and Classification; SOIL 476, Soil Microbiology; SOIL 477, Soil Physics; SOIL 479, Environmental Soil Chemistry..... 3
Plant/Animal Science Requirement, 3 credits from: AGRO/HORT 365, Principles of Crop Production; ANSC 351G, Agricultural Animals of the World 3
Institutions/Economics Requirement, 3 credits from: AG E 315G, World Agriculture and Food Problems; AG E 337G, Natural Resources Economics; AG E 484, Water Resource Economics..... 3
College of Engineering
Irrigation Requirement, 3 credits from: AEN 478, Irrigation and Drainage Engineering; AEN 498, Special Topics 3
Engineering Specialty Requirement, 3 credits from: AEN 335, Engineering for Biological Systems; AEN 475, Soil and Water Conservation..... 3
Design Requirement, 3 credits from: AEN 440, Design Applications; AEN 459, Design of Water Wells/Pumping Systems..... 3

ENGINEERING PHYSICS

DEGREE: Bachelor of Science in Engineering Physics

The Engineering Physics program is offered jointly by the Physics Department and the College of Engineering. The faculty is drawn from the Departments of Physics, Electrical and Computer Engineering, and Mechanical Engineering.

A strong grasp of underlying physical principles behind the development of new technologies is necessary to keep up with new developments in a high-tech world. The BS in Engineering Physics program is designed to provide quality education of students for immediate employment with technical jobs in private industries (especially high-tech industries), research laboratories, and public sectors. The program trains students with a combination of engineering knowledge, physics principles, mathematical background, problem-solving strategies, and effective communicational skills. The BS in Engineering Physics also provides an excellent preparation for graduate studies in either physics or an engineering discipline.

The engineering physics program is offered jointly by the Department of Physics and College of Engineering. The BS in Engineering Physics confers an engineering credential. Students in the program complete an engineering core curriculum, either in Electrical and Computer Engineering or in Mechanical Engineering, as well as a rigorous course of study in physics and mathematics. A strong laboratory component prepares students in experimental techniques and technology using state-of-the-art equipment.

The goals of the program are

1.) to give students a strong education in the fundamentals of physics, engineering, applied mathematics, and computation;
2.) to develop skill in real-world problem solving starting from fundamental physical principles;
3.) to improve communication skills; and
4.) to develop ability to work in a team.

The student must choose either the Electrical Engineering Option or the Mechanical Engineering Option. The requirements are listed below. Students must earn a C or better in all required courses.

Requirements for Electrical Option (128 or 129 credits)

Physics (40 or 41 credits)
PHYS 213, Mechanics 3
PHYS 213L, Experimental Mechanics 1
PHYS 214, Electricity and Magnetism 3
PHYS 214L, Electricity and Magnetism Laboratory 1
PHYS 217, Heat, Light, and Sound 3
PHYS 217L, Experimental Heat, Light, and Sound..... 1
PHYS 315, Modern Physics..... 3
PHYS 315L, Experimental Modern Physics..... 2
PHYS 451, Intermediate Mechanics I..... 3
PHYS 454, Intermediate Modern Physics I 3
PHYS 455, Intermediate Modern Physics II..... 3
PHYS 475, Advanced Experimental Modern Physics 3, or PHYS 471, Modern Experimental Optics 2
PHYS 480, Thermodynamics..... 3
PHYS 495, Mathematical Methods of Physics I 3
Physics electives 6

Electrical Engineering (41 credits)
E E 111, Introduction to Electrical and Computer Engineering..... 4
E E 161, Computer-Aided Problem Solving 4
E E 211, AC Circuits..... 4
E E 221, Electronics I 4
E E 261, Digital Design I 4
E E 311, Signals and Systems 4
E E 315, Electromagnetics I 4
E E 341, Control Systems, or E E 332, Introduction to Electrical Power Engineering..... 4
E E 498, Capstone Design I 3
E E 499, Capstone Design II..... 3
Electrical engineering elective..... 3

Mathematics (15 credits)
MATH 191, Calculus and Analytic Geometry I 3
MATH 192, Calculus and Analytic Geometry II..... 3
MATH 291, Calculus and Analytic Geometry III..... 3
E E 301, Vector Principles 3
MATH 392, Ordinary Differential Equations 3

Natural Science (4 credits)
CHEM 111, General Chemistry I..... 4

Additional General Education Requirements (28 credits)
ENGL 111G, Rhetoric and Composition..... 4
ENGL 218G, Technical and Scientific Communication 3
Critical thinking/analysis elective (noncomputer)..... 3
Historical perspective elective..... 3
Human thought elective..... 3
Social analysis elective..... 3
Literature/fine arts elective 3
Viewing a Wider World electives*..... 6
*Viewing a Wider World courses cannot be taken in engineering or physics.

Requirements for Mechanical Option (128 credits)

Physics (38 credits)
PHYS 213, Mechanics 3
PHYS 213L, Experimental Mechanics 1

PHYS 214, Electricity and Magnetism 3
PHYS 214L, Electricity and Magnetism Laboratory 1
PHYS 217, Heat, Light, and Sound 3
PHYS 217L, Experimental Heat, Light, and Sound 1
PHYS 315, Modern Physics 3
PHYS 315L, Experimental Modern Physics 2
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 475, Advanced Experimental Modern Physics 3
PHYS 495, Mathematical Methods of Physics I 3
Physics elective 3

Mechanical Engineering (43 credits)
C E 301, Mechanics of Materials 3
M E 102, Introduction to Mechanical Engineering 1
M E 159, Graphical Communication and Design 2
M E 236, Engineering Mechanics I 3
M E 237, Engineering Mechanics II 3
M E 240, Thermodynamics 3
M E 260, Mechanical Engineering Problem Solving 3
M E 328, Engineering Analysis I 3
M E 329, Engineering Analysis II 3
M E 333, Intermediate Dynamics 3
M E 338, Fluid Mechanics 3
M E 341, Heat Transfer 3
M E 426, Design Project Laboratory I 3
M E 427, Design Project Laboratory II 3
M E 449, Senior Seminar 1
Engineering elective 3

Mathematics (15 credits)
MATH 191, Calculus and Analytic Geometry I 3
MATH 192, Calculus and Analytic Geometry II 3
MATH 291, Calculus and Analytic Geometry III 3
MATH 392, Ordinary Differential Equations 3
Math elective from M E list 3

Natural Science (4 credits)
CHEM 111, General Chemistry I 4

Additional General Education requirements (28 credits)
ENGL 111G, Rhetoric and Composition 4
ENGL 218G, Technical and Scientific Communication 3
Critical thinking/analysis elective (non-computer) 3
Historical perspective elective 3
Human thought elective 3
Social analysis elective 3
Literature/fine arts elective 3
Viewing a Wider World electives* 6
*Viewing a Wider World courses may not be taken in engineering or physics.

ELECTRICAL and COMPUTER ENGINEERING

The Klipsch School of Electrical and Computer Engineering

College Associate Professor Professor Krist Petersen, interim department head

Associate Professor Paul Furth, associate department head
College Associate Professor Sheila Horan, freshman adviser
Professors Black, (emeritus), Carden (emeritus), Castillo, Flachs (emeritus), Giles, Stephen Horan, Johnson*, Jordan (emeritus), Kazda (emeritus), Kersting (emeritus), Ludeman (emeritus), Merrill (emeritus), Ng, Ramirez-Angulo, Ranade, Reinfelds (emeritus), Smolleck*, Steelman* (emeritus), Stochaj, Taylor (emeritus); ***Associate Professors***, DeLeon, Furth, Jedlicka, Paz, Prasad, Voelz; ***Assistant Professors*** Borah, Cook, Creusere, Huang, Lyman, Mitra; ***College Associate Professors*** Sheila Horan, Petersen; ***College Assistant Professor*** Pippen; ***Adjunct Professor*** Vorontsov; ***Adjunct Assistant Professors*** Ellis, Garcia; ***Adjunct Instructors*** Boehmer, Geyer
(505) 646-3115; eeoffice@nmsu.edu; www.ece.nmsu.edu
**Registered Professional Engineer (NM)*

DEGREE: Bachelor of Science in Electrical Engineering

The undergraduate program of the Klipsch School is fully accredited by the Accreditation Board for Engineering and Technology (ABET) and stresses the development of analytical tools and physical concepts required to prepare students for immediate employment or graduate study. The program is flexible, allowing students to choose course work in the interest areas of communications, computers, control systems, digital design, electric energy systems, electromagnetics and microwave engineering, micro-electronics, photonics, signal processing, telemetry, and space systems engineering.

Electrical Engineering Program Education Objectives

The Klipsch School is dedicated to providing a quality, hands-on, educational experience. Upon graduation, students will have the technical, communication, and critical thinking skills necessary to begin a fulfilling career and/or pursue graduate studies in electrical and computer engineering. Baccalaureate graduates of the Klipsch School are:

- able to apply engineering, science, and mathematical skills to meet the technical challenges in electrical engineering
- experienced in the design process: conceptualization, solution, formulation, implementation, and verification
- able to communicate effectively and operate in diverse teams
- aware of their professional and ethical responsibilities as practicing engineers
- prepared for productive employment and/or the pursuit of an advanced degree

Requirements (total credits 128)

Electrical Engineering (54 credits)
E E 111, Introduction to Electrical and Computer Engineering[1,2] 4
E E 161, Computer-Aided Problem Solving[1, 2, 3] 4
E E 211, AC Circuits[1, 2] 4
E E 221, Electronics I[1, 2] 4
E E 261, Digital Design I[1, 2] 4
E E 311, Signals and Systems[1, 2] 4
E E 315, Electromagnetics I[1, 2] 4
E E 332, Introduction to Electric Power Engineering[1, 2] 4
E E 341, Systems I[1, 2] 4
EE Electives* 12
Capstone Elective* 6

Mathematics (21 credits)
MATH 191, Calculus I[2] 3
MATH 192, Calculus II[2] 3
MATH 291, Calculus III[2] 3
E E 301, Vector Principles[2] 3
MATH 392, Differential Equations 3
Statistics Elective* 3
Math Elective* 3

Natural Science (12 credits)
CHEM 111, General Chemistry I[1] 4
PHYS 215, General Physics I[1,2] 4
PHYS 216 or 217, General Physics II[1,2] 4

Engineering (13 credits)
E E 461, Program Management 3
Engineering elective* 3
Technical elective* 6

General Education (28 credits)
ENGL 111G, Rhetoric and Composition[2] 4
ENGL 218G, Technical and Scientific Communication 3
COMM 265G, Principles of Human Communication 3
Historical Perspective Elective* 3
Human Thought Elective* 3
Literature/Fine Arts Elective* 3
ECON 251G, Macroeconomics, or ECON 252G, Microeconomics 3