Feng Shi 747-2424

Northern New Mexico College

Bachelor of Engineering (BEng)
MECHANICAL ENGINEERING
Solar Energy Concentration

The curriculum of the BEng in Mechanical Engineering is designed for those engineering students who intend to launch a career in the design, installation, maintenance and repair of solar energy conversion and storage devices, modules and systems used for alternative energy sources or controllers. Coursework in the program is practice-orientated and prepares students to work in a variety of technology-intensive environments-engineering organizations, small or large businesses, product design or manufacturing companies, and alternative energy consultancies and public policy agencies. The breadth of training in hardware, software, power engineering, troubleshooting equipment and other technological tools will enable the graduate to work in a variety of roles in such environments as an electric grid engineer, a power engineering network designer, alternative energy engineer or project manager. The graduate of this curriculum will be professional engineering specialist in solar energy power sources, but broadly versed in mathematics, physics, computer science, and business fundamentals.

Students are advised not to attempt upper division coursework (300 and 400-level classes) unless you have earned a GPA of 2.5 or better in all IT, CS, and CT coursework taken at the 100 and 200-level. Failure to maintain an overall GPA of 2.0 or better in all coursework will be sufficient cause for being dropped from the program.

GENERAL EDUCATION (53 crs)	**COMPLETED**	**Planned Timeline** (By Semester)
Communications (9 crs)		
ENG 111 English Composition I (3) *Pre-requisite: ENG 109 or adequate score on the Course Placement Evaluation*	_____	_____
ENG 116 Technical Writing (3) *Pre-requisite: ENG 111*	_____	_____
SPCH 130 Public Speaking (3) *Pre-requisite: ENG 109 or adequate score on the Course Placement Evaluation*	_____	_____
Mathematics (17 crs)		
MATH 145 Introduction to Probability and Statistics (3) *Pre-requisite: MATH 130 or adequate score on the Course Placement Evaluation*	_____	_____
MATH 162 Calculus I (4) *Pre-requisites: MATH 150 and MATH 160 or adequate score on the Course Placement Evaluation*	_____	_____
MATH 163 Calculus II (4) *Pre-requisites: MATH 155 and MATH 162 or adequate score on the Course Placement Evaluation*	_____	_____
MATH 314 Linear Algebra with Applications (3) *Pre-requisites: MATH 163 or adequate score on the Course Placement Evaluation*	_____	_____
MATH 316 Applied Ordinary Differential Equations (3) *Pre-requisite: MATH 163, with MATH 264 recommended.*	_____	_____
Laboratory Sciences (12 crs)		
CHEM 121/L General Chemistry I with lab (4) *Pre-requisite: MATH 130 or adequate score on the Course Placement Evaluation*	_____	_____
PHYS 215 Engineering Physics I with lab (4) *Pre-requisite: MATH 162; Co-requisite: PHYS 215L*	_____	_____
PHYS 216 Engineering Physics II with lab (4) *Pre-requisite: MATH 162, PHYS 161/L; Co-requisite: 216L*	_____	_____
Social/Behavioral Sciences (6 crs)		
Pre-requisite: ENG 109 or adequate score on the Course Placement Evaluation		
ECON 201 Microeconomics (3)	_____	_____
Elective (3) _____	_____	_____

You must select courses from *at least one different discipline areas* from the following list:

ANTH 101/L Physical Anthropology w/Lab (4)
ANTH 102 Intro to Social & Cultural Anthropology (3) (Fall)
ANTH 111 Language and Culture (3)
ANTH 207 Cultures of New Mexico (3)
ANTH 110 Indian Culture of the Southwest
ECON 200 Macroeconomics (3)

ECON 201 Microeconomics (3)
GEOG 111 World Geography (3)
PSCI 110 The Political World (3)
PSCI 120 Contemporary Poltical Issues (3)
PSCI 200 American Politics (3)
PSCI 210 State and Local Government (3)
PSCI 212 The American Presidency (3)
PSY 105 General Psychology (3)
PSY 210 Theories of Personality (3)
PSY 229 Adolescent Psychology (3)
PSY 230 Psychology of Adjustment (3)
PSY 232 Abnormal Behavior (3)
PSY 270 Social Psychology (3)
PSY 290 Developmental Psychology (3)
SOC 101 Introduction to Sociology (3)
SOC 213 Deviant Behavior (3)
SOC 216 Ethnic and Intercultural Relations (3)
SOC 220 Social Problems (3)
SOC 225 Marriage and the Family (3)
* Plus, topic courses with student advisor's approval

<u>Humanities and Fine Arts</u> (9 crs)
Pre-requisite: ENG 109 or adequate score on the Course Placement Evaluation
You must select courses from *at least two different discipline areas*

PHIL 220 Ethics (3)		_____	_____
Elective (3)	_____	_____	_____
Elective (3)	_____	_____	_____

Choose two electives from the following list:
ART 105 Introduction to Art (3)
ART 107 History of Art I (3)
ART 208 History of NM Art & Architecture (3)
ART 211 History of Art II (3)
DANC 240 Dance Appreciation (3)
ENG 270 Children's Literature (3)
Pre-requisite ENG 111
ENG 262 Literature of the Southwest (3)
Pre-requisite ENG 112
ENG 265 Native American Literature 1 (3)
Pre-requisite ENG 111
ENG 266 Native American Literature II (3)
Pre-requisite: ENG 111
ENG 280 Readings in Literature (3)
Pre-requisite ENG 111
ENG 290 Study of Literature
Pre-requisite ENG 111
ENG 294 Mythology (3)
Pre-requisite ENG 111
HIST 101 Western Civilization I (3)
HIST 102 Western Civilization II (3)
HIST 161 History of the U.S. to 1877 (3)
HIST 162 History of the U.S. from 1877 (3)
HIST 200 History of the World Religions (3)
HIST 220 Southwestern Women's History (3)
HIST 230 Chicano Experience in the US (3)
HIST 250 American Indian History (3)
HIST 260 History of New Mexico (3)
HUM 105 Humanities of the Southwest (3)
HUM 311 Why the Social Sciences Matter ** (3)
HUM 414 Humanity and Creativity ** (3)
HUM 421 History, Literature, Art & Philosophy ** (3)
MUS 103 Music History & Literature I (3)
MUS 105 Music Appreciation (3)
MUS 218 Music History & Literature II (3)
PHIL 110 Intro to Philosophical Problems (3)

PHIL 111 History of Philosophy (3)
PHIL 150 Critical Thinking (3)
PHIL 220 Ethics (3)
PIS 200 Introduction to Pueblo Indian Studies (3)
THE 120 Introduction to Theatre I (3)
THE 130 History of Theatre (3)
Plus, topic courses with advisor's approval

* If your major is in the area of the Humanities/Fine Arts, unless otherwise regulated by a given department, you should select 9 hrs from Area V and 6 hrs. from Area IV; if in the Social/Behavioral Sciences, you should select 9 hrs from Area IV and 6 hrs from Area V. Consult your major advisor. In any case, you must complete a minimum spread of 15 hrs between Areas IV and V. .

** Students in associate degree programs are advised that upper-division courses are not covered under financial aid.

HEALTH, PHYSICAL EDUCATION & RECREATION (1 crs)

Electives (1) _____ _____ _____

PROGRAM REQUIREMENTS (74 crs)

Solar Energy and Storage (32 crs)

ME 160L General Engineering Design I (3) _____ _____
Pre-requisite: MATH 160 or adequate score on the Course Placement Evaluation

ME 202 Engineering Statics (3) _____ _____
Pre-requisite: PHYS 215/L and MATH 163 or adequate score on the Course Placement Evaluation

ME 260L Engineering Design II (3) _____ _____
Pre-requisite: ME 160L and MATH 162 or adequate score on the Course Placement Evaluation

ME 301 Thermodynamics (3) _____ _____
Pre-requisite: CHEM 122/L, PHYS 216/L and MATH 163 or adequate score on the Course Placement Evaluation

ME 306 Dynamics (3) _____ _____
Pre-requisite: ME 202 and MATH 163 or adequate score on the Course Placement Evaluation

ME 317 Fluid Mechanics (3) _____ _____
Pre-requisite: ME 301

ME 318L Mechanical Engineering Lab (3) _____ _____
Pre-requisite: ME 306

ME 403 Solar Thermal Applications (3) _____ _____
Pre-requisite: PHYS 216/L

ME 490 ME Capstone I (4) _____ _____

ME 491 ME Capstone II (4) _____ _____
Pre-requisite: ME 490

Support Technologies (33 crs)

EECE 152 Computer Programming I (4) _____ _____

EECE 203 Circuit Analysis I (4) _____ _____
Pre-requisite: MATH 163 and PHYS 216/L

EECE 238L Computer Logic Design (4) _____ _____
Pre-requisite: MATH 163 and PHYS 216/L

EECE 371 Materials and Devices (3) _____ _____
Pre-requisite: PHYS 216/L

EECE 453 Electric Energy Storage Devices (3) _____ _____
Pre-requisite: Pre-requisite: EECE 203

EECE 472 Photovoltaic Devices (3) _____ _____
Pre-requisite: PHYS 216/L.

Elective in CS/EECE/IT/ME at 2xx level (4) _____ _____ _____

Elective in CS/EECE/IT/ME at 3xx level (4) _____ _____ _____

Elective in CS/EECE/IT/ME at 4xx level (4) _____ _____ _____

Business (9 crs)

Electives in ENGR at 4xx-level (9) _____ _____ _____

_____ _____ _____

_____ _____ _____

TOTAL CREDIT HOURS 128

SUGGESTED SEQUENCE OF COURSES

HFA = Humanities & Fine Arts (Area V)
SBS = Social/Behavioral Science (Area IV)

FIRST SEMESTER (16 crs)

ENG 111 English Composition I (3)
MATH 145 Introduction to Probability and Statistics (3)
ECON 201 Microeconomics (3)
PHIL 220 Ethics (3)
CHEM 121/L General Chemistry I/L (4)

SECOND SEMESTER (16 crs)

ENG 116 Technical Writing (3)
MATH 162 Calculus I (4)
SBS Elective (3)
HFA Elective (3)
ME 160L Gen. Engineering Design I (3)

THIRD SEMESTER (18 crs)

SPCH 130 Public Speaking (3)
MATH 162 Calculus II (4)
PHYS 215/L Engineering Physics I with Lab (4)
EECE 152/L Computer Programming I (4)
ME 260L Engineering Design II (3)

FOURTH SEMESTER (14 crs)

PHYS 216/L Engineering Physics II with Lab (4)
HPER Elective (1)
MATH 314 Linear Algebra with Applications (3)
MATH 316 Applied Ord Diff Equations (3)
ENGR 4XX Elective (3)

FIFTH SEMESTER (17 crs)

EECE 203L Circuit Analysis I (4)
ME 202 Engineering Statics (3)
ME 301 Thermodynamics (3)
EECE 371 Materials and Devices (3)
EECE 238/L Computer Logic Design (4)

SIXTH SEMESTER (16 crs)

ME/EECE/CS/IT Elective in 2XX (4)
ME 306 Dynamics (3)
ME 317 Fluid Mechanics (3)
ME 318L Mechanical Engineering Lab (3)
ENGR 4XX Elective (3)

SEVENTH SEMESTER (17 crs)

ME/EECE/CS/IT Elective in 3XX (4)
EECE 453 Electric Energy Storage Devices (3)
ME 403 Solar Thermal Applications (3)
HFA Elective (3)
ME 490 Capstone I (4)

EIGHTH SEMESTER (14 crs)

ME/EECE/CS/IT Elective in 4XX (4)
EECE 472 PV Devices (3)
ME 491 Capstone II (4)
ENGR 4XX Elective (3)

Educational Planning Form (Semester)

Fall Semester	Spring Semester	Summer
Total Units	**Total Units**	**Total Units**
Fall Semester	**Spring Semester**	**Summer**
Total Units	**Total Units**	**Total Units**
Fall Semester	**Spring Semester**	**Summer**
Total Units	**Total Units**	**Total Units**