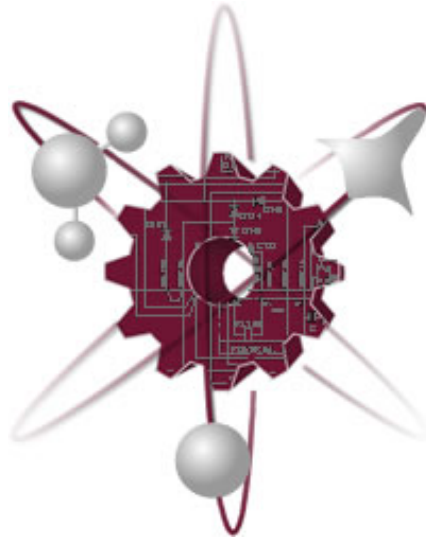


# Criterion 1: Students

## Engineering Physics

Bachelor of Science in Engineering Physics



## Self-Study Report

New Mexico State University



June 2012

## CRITERION 1. STUDENTS

This chapter describes the procedures for admission, evaluating student performance, dealing with transfer students, student advising and graduation requirements for the Engineering Physics program of the Department of Physics at New Mexico State University.

It should be noted that Engineering Physics is an engineering degree awarded through the College of Engineering, while the Department of Physics is part of the College of Arts & Sciences.

### A. Student Admissions

*Summarize the requirements and process for accepting new students into the program.*

As a land-grant institution, New Mexico State University (NMSU) has a fairly lenient admission policy. Admission criteria are listed in the NMSU's Undergraduate Catalog and they are summarized below.

To be accepted into NMSU, an entering freshman should meet the following:

- a high school GPA of at least 2.0 and an ACT standard composite score of at least 20, or
- a high school GPA of at least 2.5, or
- an ACT standard composite score of at least 21

Incoming freshman are also expected to meet the following minimum high-school requirements:

- 4 years of English, two of which must be composition, one at the junior-level,
- 2 years of science beyond general science,
- 3 years of mathematics, taken from: algebra I, algebra II, geometry, trigonometry, or advanced math, and
- 1 year of foreign language or fine arts.

A student who has a single deficiency from the list above will be admitted if the high school GPA is at least 2.25 and the ACT standard composite score is at least 20.

A new student, other than a transfer student, who does not meet the requirements for regular admission may be admitted under the provisional program. To do this, students have a high school GPA of at least 2.25 and an ACT standard composite score of at least 19. Alternatively, they must have met all but one of the minimum high school requirements with a GPA of at least 2.0 with an ACT score of 20 or have an ACT score of 21 or more. Provisional students must take at least 6, but no more than 12, credits per regular semester (3-6 during summers). Those students who earn at least a 2.0 GPA within two semesters are moved to regular admission status, the others are typically denied further attendance. However, those students may appeal to the University's Undergraduate Admission Appeals Committee and/or enroll at a community college until the deficiencies are removed.

Currently, neither the Department of Physics nor the College of Engineering impose any additional program-specific admission requirements onto incoming Engineering Physics students beyond those set by the University. Therefore, admission to the Engineering Physics

program is open to any NMSU student. In order to declare a major in Engineering Physics, a student simply declares a major as such with the registration clerk of the College of Engineering. The student's records will be modified to indicate Engineering as the primary college and Engineering Physics as the major. This is the case for both, incoming new students and already admitted students who switch majors.

However, prior to each semester, the College of Engineering places advising holds onto every engineering student (including Engineering Physics). The advising hold prevents students from enrolling in classes at NMSU's main campus until they met with the approved advisor prior to each semester. Individual departments assign advisor(s) to each engineering student or to a particular engineering major. Engineering Physics has currently two faculty advisors, Drs. Heinz Nakotte and Tom Hearn, both from the Department of Physics.

### **Math Placement**

The Engineering Physics curriculum presumes that the students are ready to take *MATH 191* (Calculus I) as beginning freshmen. It is fairly common, however, that incoming high-school graduates do not have the required math skills for the chosen Engineering Physics major. In an effort to advise students into the highest-level math classes for which they are prepared, the Department of Mathematical Sciences enforces a strict guideline to determine initial math enrollment. Students with ACT Math (ACTM) scores below 17 are placed into developmental math classes at one of the community college branches (usually, Doña Ana), such as *CCDM 103N* or *CCDM 114N*.

Students with ACTM scores above 16 must take a Math Placement Exam (MPE) to establish eligibility for higher-level classes. Although the MPE is not mandatory, without it, students are only allowed to enroll in the developmental math classes. The MPE consists of four 10-question sections, which cover material taught in different math classes: (a) Algebra Skills, (b) Intermediate Algebra, (c) College Algebra, and (d) Trigonometry. Correctly answering 60% of the questions in a given section allow the associated class to be skipped. MPE scores are reported as a set of four integers, indicating the number of questions correctly answered in each section. Thus, a score of 10,8,9,4 means the student answered all ten of the questions on (a) Algebra Skills correctly, missed two questions in the (b) Intermediate Algebra section, missed only one question on (c) College Algebra, but only got four correct in (d) Trigonometry. This student would be placed into *MATH 190 (Trigonometry and Pre-Calculus)*. Students are allowed to re-take the MPE once. The rules for math placement are provided in Table 1.1.

The Associate Dean of Engineering for Academics may, under special circumstances, recommend a student be placed in a math course other than the MPE results would indicate. Such placement is rare and must be accepted by the Department of Mathematical Sciences.

### **English Placement**

Entering freshmen with ACT English (ACTE) scores of less than 16 are placed directly into developmental English any of the branch campuses (typically on-line), such as *CCDE 105N* or *CCDE 110N*.

**Table 1.1. Initial Math Placement using ACT Math Scores or Math Placement Exam (MPE) at NMSU.**

Math Course		Minimum		Prerequisite for Direct Entry
Number	Title	ACTM	MPE	
<i>CCDM 103N</i>	Computational Skills	$\leq 15$	N/A	<i>None</i>
<i>CCDM 114N</i>	Algebra Skills	$\geq 16$	N/A	<i>CCDM 103N</i>
<i>MATH 120</i>	Intermediate Algebra	$\geq 16$	$a \geq 6$	<i>CCDM 114N</i>
<i>MATH 121</i>	College Algebra	$\geq 16$	$a+b \geq 12$	<i>Math 120</i>
<i>MATH 190</i>	Trigonometry and Pre-Calculus	$\geq 16$	$a+b+c \geq 19$	<i>Math 121</i>
<i>MATH 191</i>	Calculus I	$\geq 16$	$\geq 6,6,6,6$	<i>Math 190</i>

**Table 1.2. Initial English Placement at NMSU.**

English Course		Minimum ACTE	Prerequisite for Direct Placement
Number	Title		
<i>CCDE 105N</i>	Effective Communication Skills	1-12	<i>None</i>
<i>CCDE 110N</i>	General Composition	13-15	<i>CCDE 105N</i>
<i>ENGL 111G</i>	Rhetoric and Composition	16-24	<i>CCDE 110N</i>
<i>ENGL 111H</i>	Rhetoric and Composition-Honors	25-36	

### **Advanced Placement**

Incoming students who completed college-level courses in secondary school and have taken the Advanced Placement Examination of the College Examination Board with resulting composite scores of 3, 4 or 5 may receive college level credit. Such credit will be treated as transfer credit without a grade ('CR' will be indicated instead), will count toward graduation, and may be used in fulfilling specific curriculum requirements or course prerequisites. NMSU's evaluation criteria for advanced placement and course credit from other institutions can be found at <http://prospective.nmsu.edu/general/course-credit-by-exam.html>.

### **Upper Division Admission Requirements**

At NMSU, students are not allowed to enroll in upper division coursework (300 or above) until they have demonstrated basic skills in English and mathematics. Students satisfy their basic skills requirements once they have completed *ENGL 111G*, *MATH 180* and *Math 185*.

Transfer students may satisfy the basic skills requirement with prior credit. Those with at least 45 credits are allowed to enroll in upper division courses for one semester. This semester of

grace allows the transfer student to demonstrate the basic skills or, more commonly, lets the transfer credit catch-up to the student. After the semester of grace, transfer students must adhere to the same upper-division admission requirements as any other student.

### **Provisional Admission**

A new student (other than a transfer student) who does not meet requirements for regular admission may be admitted under the provisional program. To be admitted to provisional status, students must:

- have a minimum high school grade-point average of 2.25 and ACT composite score of 19 and meet all the minimum high school unit requirements listed above, or
- have met all but one of the minimum high school units listed above, and
  - a. have a high school grade point average of at least a 2.50 or
  - b. have a high school grade point average of a 2.00 and an ACT standard composite score of 20, or
  - c. have an ACT standard composite score of at least 21. Such a student must take at least 6, but not more than 12 credits, in a regular semester, and at least 3, but not more than 6 credits, in a single summer session.

A provisional student earning a 2.0 grade-point average or higher in at least the minimum number of credits as stated above will be granted regular admission. Should the provisional student earn less than a 1.0 grade-point average in the first semester, further attendance will be denied.

A provisional student earning less than a 2.0 grade-point average, but more than a 1.0 grade-point average in at least the minimum number of credits as stated above, in the first semester may continue for one additional semester. However, a provisional student who fails to attain a 2.0 grade-point average during the second semester will be denied further attendance. Students who are denied further attendance may reapply to NMSU after they have completed a minimum of 24 credits with a 2.0 GPA at another regionally accepted institution.

### **Home School Students**

Students enrolled in a home school program may be accepted to NMSU if they meet the requirements for regular or provisional admission as previously stated. In addition, the home school educator must submit a transcript or document that lists the courses completed and grades earned by the student, and the transcript must also indicate the date the student completed or graduated from the home school program. Home school students who are New Mexico residents and wish to participate in the Lottery Success Scholarship program are required to submit official New Mexico GED test results.

### **Admission by GED**

Any student who has successfully completed the GED may apply for admission. Students are encouraged to submit an official high school transcript of the work they completed in addition to their GED scores. The admission will depend upon satisfactory scores on the General Educational Development (GED) test and the American College Testing Program (ACT) test, and a review of minimum high school unit requirements.

### **Admission of International Students**

New Mexico State University is located in Las Cruces close to the Mexican border, and it is not uncommon to have international students (mostly of Mexican nationality) to apply for admission in the various degree programs.

The admission process for international students is described in NMSU's Undergraduate Catalog. Most importantly, students must prove their English language proficiency with standardized tests. For example, NMSU requires a score of 500 or higher for the paper-based and 61 or higher for the internet-based TOEFL test. Prospective international students must have completed a minimum of 12 years of school and submit an official diploma or completion certificate. International students seeking NMSU credit for advanced high-school courses (similar to AP courses in the US) may petition the Physics Department Head for such. Typically, the Department Head will seek advice from a colleague familiar with the educational system in the foreign country, inquire with other department heads (if the course of question is from a different department) and/or interview the student to test his/her knowledge of the subject. The Department Head may also request some written evidence, such a high-school syllabi or textbooks and then make a written recommendation and seek approval by the Dean of Academics. In the case of prospective Engineering Physics students, one approval s are granted, the College of Engineering Advising Center will petition the NMSU Registrar's Office to add the transfer credits to the official NMSU transcript of the student.

In some cases, transfer agreements exist between NMSU and foreign universities, which spell out the equivalency of courses and transfer of foreign credits.

Foreign-course transfer credits may be counted to meet course pre-requisite and/or graduation requirements, but they will not be included in the calculation of the grade-point average (GPA).

### **Readmission (Degree Seeking)**

Former students of NMSU (or of one of its Community Colleges), who have been out of school for more than two consecutive terms, are required to make formal application for readmission. Applications should be submitted to the Office of University Admissions at least 30 days before the opening of the semester or summer session for which the student plans to enroll.

A student who has attended other institutions during an absence must have official transcripts forwarded directly to the Office of University Admissions by the registrar of each institution and must be eligible to return to the college or university last attended. Transcripts must be received prior to the date of registration. Admission status at the time of readmission will normally be determined by previous NMSU academic standing. However, academic performance at other institutions attended during the applicant's absence from NMSU may be taken into consideration in determining the student's admission status.

## **B. Evaluating Student Performance**

*Summarize the process by which student performance is evaluated and student progress is monitored. Include information on how the program ensures and documents that students are meeting prerequisites and how it handles the situation when a prerequisite has not been met.*

The Department of Physics implemented a comprehensive process to evaluate the student progress based on measuring student-learning objectives and outcomes. This process and the findings will be described in great detail in Criterion 4 – Continuous Improvement.

### **Monitoring Student Progress**

The Engineering Physics program monitors student progress through yearly ***Student Progress Review*** meetings. We review each student in the program and assign them a grade, A through F, on their progress towards degree. The results of this are used to alert faculty and advisors when students are having difficulty, and also to identify top students that faculty may want to recruit into their research programs. In addition, each class participates in the NMSU evaluation system. This ensures that all physics faculty are teaching the appropriate classes at the appropriate level to optimize student success. Results from the Engineering Physics program Student Progress Reviews and class evaluations can be found in the *'Blue' Program Outcomes Notebook* (called 'blue' because of the color of its binder).

Engineering Physics students are assigned an advisor and required to be advised in person each semester. Advisors review student progress at the advising meeting and advise students on their class selection for the next semester. Advisors utilize flowcharts for each of the concentrations in the Engineering Physics program. Flowcharts are provided in the section on *Criterion 5 - Curriculum*. Each flowchart visually shows the students the pre-requisite and co-requisite requirements for a particular class. The flowcharts are used to guide the student through the degree program and provide them with a list of the courses required as well as what course sequence is recommended.

New Mexico State University supplies an online advising and planning tool called STAR (Student Academic Requirements) to audit student progress. STAR provides up-to-date degree audits to individual students as well as faculty and staff members who have the appropriate on-line access permission. All undergraduate degree programs offered by the Department of Physics (including Engineering Physics) are available on STAR. Audits can be run for any major, minor, or for catalog year. The STAR system is an essential planning tool for both students and their advisors. It is also used to ensure that all graduation requirements have been met at the time of graduation. An example of a STAR audit is provided in *Supplementary Documentation*.

### **Meeting Pre-requisites**

The system used by the University for enrolling students into classes is called Banner. This software has a built-in list to ensure students have met the proper pre-requisite requirements for taking a class. This pre-requisite list is prepared by the department and submitted to the Registrar's Office and is then entered into the degree program database. If a student attempts to register for a class in which he/she has not met the prerequisite requirement, Banner will flag the class and notify the student that they have not met course pre-requisite requirements.

On occasion, waiving a pre-requisite is unavoidable and a student will request a waiver for a pre-requisite. For example, a transfer student may need to have a pre-requisite requirement removed or a student could not take the pre-requisite in a timely fashion because of time conflicts with other classes in the previous semester(s). Students are encouraged to talk to their advisor in order to explore all possible alternative options. If a pre-requisite waiver is indeed

necessary, the students (together with the advisor) petition with the instructor to waive prerequisite requirements for a particular course.

### **Retention**

There are two student societies in the Department of Physics: the Society of Physics Students (SPS) and the Society of Engineering Physics Students (SEPh). Both societies are provided with space in the Physics Building (Gardiner Hall) and the department hosts and supports many of their activities. In addition, each society has two faculty advisors, at least one of whom will participate in their meetings (typically every week during the semester). Both societies play an instrumental role in the department's recruitment and retention efforts.

The Department of Physics organizes annual meetings involving all faculty members to discuss the progress of every single undergraduate student enrolled in its different major programs (including Engineering Physics). Students that are 'in trouble' (failing grades, inadequate course enrollments or similar) are contacted individually by their respective advisors in order to discuss how to best approach and correct their individual situation.

The office of Associate Dean for Academics of the College of Engineering informs the Chair of the Engineering Physics Program Committee whenever a previously enrolled Engineering Physics student has transferred to a different program or withdrew from the university. The Chair of the Engineering Physics Program Committee will try to contact those students in an attempt to understand what led to the student's decision to leave the program. Such information is used as additional input for evaluation and assessment of the Engineering Physics program.

### **C. Transfer Students and Transfer Courses**

*Summarize the requirements and process for accepting transfer students and transfer credit. Include any state-mandated articulation requirements that impact the program.*

Transfer students from other colleges or universities may be accepted for undergraduate studies if they have at least a 2.0 cumulative grade-point average and are eligible to return to the college or university last attended. The regulations for transfer credits are listed in the Undergraduate Catalog, and they are summarized below.

Transfer students who have less than 30 credits have to meet first-time freshman admission requirements.

### **Transcripts**

The transfer student must have official transcripts forwarded directly to the Office of University Admissions by the Registrar of each college or educational institution previously attended. The ACT or SAT may be required of students who have not earned credit for the first semester of college English. A student who conceals the fact that he or she has attended another college or university, and who has not had the Registrar submit a transcript for each institution whether or not credit was earned, will be subject to immediate suspension. Transcripts must be received before the date of registration. Students submitting transcripts from a foreign post-secondary institution are required to have the credentials evaluated by a nationally recognized credentialing service. NMSU requires a "Comprehensive Course by Course Evaluation" be



completed for each post-secondary institution attended. Contact the Office of University Admissions for approved credentialing organizations.

### **Transfer of Credits at NMSU**

NMSU evaluates courses from postsecondary institutions that are regionally accredited or are candidates for regional accreditation. Transfer students will receive full credit for coursework completed with a grade of C or better, provided the classes are similar or equivalent to courses offered at NMSU. A transfer student may, on the basis of an evaluation of his or her transcripts, receive credit for courses taken at other institutions in which a grade of D was earned.

However, NMSU does not accept the transfer of courses with D grades that satisfy basic academic competency (basic skills) in English and mathematics. NMSU will not accept transfer credit for 4 credit basic skills courses (such as *ENGL 111G* and *CCDM 114 N*) when the incoming course carries less than 3 credit hours. Also, colleges or departments may choose to accept only courses graded C or higher in their programs for both transfer and native students. Any lower-division course from another institution receiving transfer credit from NMSU at the 300 or above level will still count as a lower-division course. Transcripts will be reevaluated when students transfer from one NMSU college to another. Each college determines which transferred courses are applicable toward a degree or a minor. Grades earned in courses taken at other institutions are not included in the calculation of the NMSU GPA, except for grades earned by approved National Student Exchange students.

### **Community/Junior College Transfers**

Community/junior college transfer students may be admitted and classified on the basis of acceptable credits earned at a two-year institution. However, transfer students are subject to the same graduation requirements as other NMSU students, including the required minimum number of credits from courses numbered 300 or above and the requirement that the last 30 credits must be earned through this university.

### **Evaluation of Transfer Credits**

Once a student has been admitted to NMSU, an evaluation of credits on a course-by-course basis is submitted to the college (by the Registrar's Office) to which the student is admitted. The student's academic dean approves those transfer courses that are acceptable toward a degree or a minor. Credits from non-accredited institutions may be evaluated by the student's academic dean after the student has completed two semesters in full-time status with satisfactory grades. Currently enrolled students must obtain prior approval from their academic dean before work taken at another institution may apply toward meeting graduation requirements.

### **Religious Center Courses in Religion**

Courses in religion, offered by the various religious centers through higher educational institutions with which they are affiliated, are open to all students, and these or similar courses from other universities may be transferred for credit to this university. If a student wishes to have earned credits transferred to NMSU, the following procedures must be observed:

- Obtain written approval from the academic dean prior to registration for the course at the religious center
- Count the credit in the course as part of the total semester load
- Following completion of the course, request that the institution granting the credit send a transcript of the credit to the registrar at NMSU

Registration for these courses in religion is separate from NMSU's registration and is conducted by the religious center offering the course. No more than 6 credits in such courses may be transferred to NMSU.

### **Transferring Courses to Fulfill the New Mexico General Education Common Core**

During the 2005 New Mexico Legislative session, Senate Bill 161, consistent with requirements of state law (Chapter 224 of the Laws of New Mexico, 1995 as amended) was signed into law to further enhance and facilitate the articulation of general education courses among New Mexico's colleges and universities. In accordance with policies established by the New Mexico Higher Education Department, designated general education core courses successfully completed at any regionally accredited public institution of higher education in New Mexico are guaranteed to transfer to any New Mexico public institution. Students enrolling for the first year of study at a New Mexico college or university and considering possible transfer into a certificate and/or degree program at another institution are encouraged to take the courses approved for transfer during their freshman and sophomore year of study.

The core matrix of approved courses guaranteed to transfer and meet general education requirements at any New Mexico college or university can be found on the New Mexico Higher Education Department web site at [www.hed.state.nm.us](http://www.hed.state.nm.us). Courses are listed by institution, whether university or community college, under each of the five general education areas. The courses for New Mexico State University are listed in the required courses section of the Undergraduate catalog.

### **Transferring Courses Within Degree Programs**

To facilitate the transfer of courses within certain degree programs, New Mexico colleges and universities have collaborated to develop transferable discipline modules. These are made up of an agreed upon number of hours and courses. When discipline module courses are taken in addition to the 35 hour general education core, the total number of hours in a transfer module is approximately 64.

For information on the transferable discipline module for Business or Early Childhood Education, see the NMSU Undergraduate catalog. Information on all available statewide transfer modules can be found on the New Mexico Higher Education Department web site at [www.hed.state.nm.us](http://www.hed.state.nm.us).

### **Student Responsibility**

Planning for effective transfer within maximum efficiency is ultimately the student's responsibility. Responsible transfer planning includes early and regular consultation with the intended degree-granting institution to assure that all pre-transfer coursework will meet the requirements of the desired degree.

### **Transfer Credit Appeal Process**

All New Mexico public post-secondary institutions are required to establish policies and practices for receiving and resolving complaints from students or from other complainants regarding the transfer of coursework from other public institutions in the state. A copy of NMSU's transfer credit policy may be obtained from the Office of the Registrar or from the Deputy Secretary for Academic Affairs, Higher Education Department, 2048 Galisteo Street, Santa Fe, New Mexico 87505-2100.

### **National Student Exchange (NSE)**

Courses transferred back to NMSU by students participating in the National Student Exchange (NSE) Program will be evaluated as NMSU courses and recorded on the student's academic record. All computable grades earned will be included in calculating the student's cumulative grade-point average.

### **Processing for Completing Exceptions**

Exceptions can be submitted to the Academic Dean of the College of Engineering for the following reasons:

- Degree Requirement Substitution (allow a non-standard course to satisfy a requirement)
- Degree Requirement Waiver (allow graduation without satisfying a requirement)
- Pre-Requisite Waiver
- Change Transfer Evaluation (change an existing transfer evaluation)
- Request Foreign Transfer Credit (allow credit for work done abroad)

The College of Engineering implemented a weblink (<https://enr.nmsu.edu/cgi-bin/exception-request>) for electronic submission of requests for substitutions and/or exceptions for approved personnel. As the Chair of the Engineering Physics Program Committee, Dr. Heinz Nakotte has been granted access.

## **D. Advising and Career Guidance**

*Summarize the process for advising and providing career guidance to students. Include information on how often students are advised, who provides the advising (program faculty, departmental, college or university advisor).*

### **Advising**

Prior to each semester, the College of Engineering places an advising hold on all students' Banner accounts. This prevents the students from registering for classes until they have been advised. Once the students have been advised, the advising hold is removed and the students will be able to register. This database is updated by the department as needed to reflect changes in the course catalog.

Advising begins with required new student registration/orientation (NSR) for freshmen in the summer before the start of their first semester at NMSU. During the orientation, the students will do the following:

- be given an overview of the university and university life,
- take the Math Placement Exam (MPE), and

- meet with the Engineering Physics Advisor to discuss the concentrations of the Engineering Physics program and to place them in the correct classes .

Students often arrive with deficiencies in English and Math. Based on SAT and ACT English scores, students may be required to take remedial English course, if necessary. All NMSU students are required to take at least two college level English courses. Similarly, Math placement is based on SAT or ACT scores plus a Math Placement Exam administered by the Math Department. The Engineering Physics curriculum presumes students begin Calculus (Math 191) during their first semester. Students who are not prepared to start at the Calculus level take preparatory math courses, chemistry, and General Education courses during that transitional period. Those students generally take longer than other students to complete their degrees. Occasionally, the advisors try to meet the challenge of keeping these students interested and involved in the EP program by placing them into 100-level Physics courses.

Once students are enrolled in the Engineering Physics program, the students continue to be advised by the Engineering Physics Advisors throughout their program. All Engineering Physics students are advised in person (at least once) prior to each semester. Typically, the Engineering Physics students will know their advisor and arrange for a meeting just before on-line course registration opens. The Chair of the Engineering Physics Program Committee will send e-mail reminders to students who forget to arrange for a meeting with their advisor. Advising holds will be removed only after the student met with an advisor.

Advising for course enrollment in the upcoming semester entails the following steps:

### **Step 1.**

#### *Collect relevant Registration Materials*

- (a) a print-out of the student's most current STAR audit transcript
- (b) a list of relevant classes and their schedules;
- (c) a list of Viewing a Wider World courses;
- (d) a list of New Mexico General Education Common Core courses; and
- (e) a plan of course schedules up to graduation (flow chart)

### **Step 2.**

#### *Draft a Schedule*

- (a) use the pre-requisite flowchart to check pre-requisites and co-requisites and identify long course sequences that can affect the number of semesters required to complete the degree program; be aware that some core courses are not offered every semester
- (b) choose humanities and social science electives, such that they satisfy both NMSU's General Education Requirements and the NM General Education Common Core.

### **Step 3.**

#### *Removal of Advising Hold and Class Registration*

Once the student has met with his/her advisor, the Advisor will ask the Department of Physics Secretary, Loretta Chavez, to remove the hold. After that, the student is cleared for on-line course registration.

The Engineering Physics Advisors keep folders for each individual Engineering Physics student, and they are encouraged to fill out an Advising Form in order to keep track of any student/advisor interaction. The Advising Form has space for advisor notes, course substitutions, and an area for action items that require immediate attention. An electronic

copy of the most current Advising Form can be accessed at <http://engineeringphysics.nmsu.edu/forms.html>, and a copy is also provided in *Supplementary Information*. After coming in for advising, students will be given a copy of the most recent advising form.

### **Prospective graduates**

Engineering Physics students who plan to complete graduation requirements at the close of the next semester or summer session will make an appointment for a record check with either one of the Engineering Physics Advisors. They will also file an on-line *Degree Application Form* and submit it prior to the posted deadline to the Registrar's Office.

### **Closed classes**

ADD/DROP slips can be used for enrollment in a closed section of a course. Each ADD/DROP slip requires signatures from the Engineering Physics advisor, the instructor of the course, and the department head of the department offering the course.

### **Career Guidance**

Career advising of Engineering Physics students continues throughout their academic programs. With strong participation from the two student societies (SPS and SEPh), the Department of Physics organizes and is involved in a number of activities geared toward career guidance and preparation, such as:

- undergraduate research opportunities at NMSU,
- finding summer internships in academia, national labs and/or industry,
- on-campus visits and colloquia from representatives of industry, national labs or professional societies,
- Physics GRE preparation workshops, and
- CV workshops

These and similar activities allow that students learn about career opportunities and how to 'sell yourself' to potential employers of Engineering Physics graduates. Moreover, several physics faculty members are open to review application or interview material of prospective graduates upon request. Therefore, our Engineering Physics graduates are typically well prepared for on-campus *Career Fairs* and similar events, which are often attended by companies and other entities that tend to recruit Engineering Physics graduates.

## **E. Work in Lieu of Courses**

*Summarize the requirements and process for awarding credit for work in lieu of courses. This could include such things as life experience, Advanced Placement, dual enrollment, test out, military experience, etc.*

The university offers a Study Abroad alternative to substitute for one of the Viewing the Wider World (VWW) course requirements. Other than that, the Engineering Physics program does not have a process for awarding credit for work in lieu of courses. However, students who feel that they have already mastered a topic can petition with an instructor to take a challenge exam, and the petition requires approval by the Department Head and the Engineering Physics

Committee. The petition has to outline reasons why the student believes that he/she has already mastered the subject.

In general, offering of challenge exams is discouraged and therefore extremely rare. However, if permission is granted, the challenge exam is designed by the instructor and should reflect the knowledge base a student is expected to have mastered by the end of the particular course. If the student passes the challenge exam the Associate Dean of Engineering for Academics and the Registrar will be notified, and the student will be awarded credit for the class.

## **F. Graduation Requirements**

*Summarize the graduation requirements for the program and the process for ensuring and documenting that each graduate completes all graduation requirements for the program. State the name of the degree awarded (Master of Science in Safety Sciences, Bachelor of Technology, Bachelor of Science in Computer Science, Bachelor of Science in Electrical Engineering, etc.)*

For the baccalaureate degree, students must satisfy three sets of requirements: university-, college-, and program-specific, each of which is described in some more detail below.

### **University-Specific Requirements**

New Mexico State University enforces the following **minimum requirements** for each of the approved degree programs:

- completion of 128 credits,
- demonstrated basic skills in English and remedial laboratory work,
- completion of 48 credits in courses numbered at least 300 (upper division),
- a cumulative GPA of 2.000 in all courses taken at NMSU, and
- at least 30 of the last 36 credits must be earned at NMSU.

As part of their 128 credits, students are expected to satisfy course requirements due to state-wide New Mexico Common Core or **general education requirements**. The New Mexico Common Core is intended to provide all students with a broad foundation and common framework upon which to develop knowledge and skills, social consciousness and respect for self and others. In particular, the New Mexico Common Core ensures that all students receive a broad background in English, social sciences, general sciences, and the arts. An approved list of General Education courses at NMSU (identified by the G suffix) is published in the Undergraduate Catalog. The New Mexico Common Core consists of the 5 different areas:

- Area I: Communications (9-10 credits)
- Area II: Mathematics/Algebra (3 credits)
- Area III: Laboratory Science (8 credits)
- Area IV: Social/Behavioral Sciences (6-9 credits)
- Area V: Humanities and Fine Arts (6-9 credits)

In general, Engineering Physics students will automatically satisfy general education requirements in Areas I-III since courses (such as *ENGL111G*, *ENGL 218G*, *COMM 265G*, *MATH 191G*, *PHYS 215G & lab* and *PHYS 216 G & lab*) can be taken to satisfy both general education and program-specific requirements.

Moreover, NMSU requires all students to satisfy an equivalent of 6 credits for ***Viewing the Wider World (VWW) courses***. In most cases, students will take two separate 3-credit VWW courses to satisfy this requirement. An approved list of VWW courses (identified by the V suffix) is published in the Undergraduate Catalog. VWW are upper-division courses (300-400 level) and should be taken in a student's junior/senior year. One of the VWW must be taken in a college different than the student's home college, i.e. the College of Engineering in the case of Engineering Physics students. The other VWW course can be taken in the student's college, but (1) it must be in a different department, (2) may not be cross-listed with the student's home department, and (3) cannot be counted as one of the requirements for the student's major. Until the 2009-2010 catalog, students were also allowed to satisfy 3 credits of VWW by taking 9 credits of upper-division courses (300-level and above) in a college different than their own (9-credit rule), as outlined in the Undergraduate Catalog.

### **College-Specific Requirements**

The College of Engineering at NMSU has no specific additional course requirements, beyond those listed under university-specific requirements. However, the College of Engineering expects all engineering students to satisfy the following requirements:

- earn a cumulative grade-point average of 2.0 or better before enrolling in engineering courses numbered 300 or above,
- complete all of the required pre-requisites and courses in engineering, technology, math and sciences with a grade C or better
- fulfill all university-, college- and program-specific degree requirements.

### **Program-Specific Requirements**

Since 2008, the BS in Engineering Physics (EP) at NMSU is offered with 4 different concentrations:

- *Aerospace Engineering,*
- *Chemical Engineering,*
- *Electrical Engineering,*
- *Mechanical Engineering.*

Throughout the document, we will use *Aerospace, Chemical, Electrical and Mechanical concentration* for brevity reasons (Engineering being implied).

The Engineering Physics program is administered by a standing Engineering Physics Program Committee, as outlined in the previous section - Background Information. The Engineering Physics Program Committee designs, implements and continuously re-assesses the curricula and course requirements for each of the Engineering Physics concentrations. The Engineering Physics Program Committee consults with and seeks approval from the Heads of participating departments (Physics, Mechanical & Aerospace, Electrical and Chemical) and the Associate Dean of Engineering for Academics prior to making any major changes to any of the program's concentrations.

Program-specific requirements for engineering courses differ between different concentrations, but all concentrations have similar cores of math, physics and other sciences courses. With the

exception a few (more recent) capstone design projects, there are no courses solely for Engineering Physics. Engineering Physics students take the same physics and engineering courses, taken by the majors of respective programs of participating departments.

Program-specific requirements are published in the Undergraduate Catalog and they are implemented and kept up-to-date in STAR. Moreover, the Department of Physics developed appropriate flowcharts and checklists for each concentration's requirements, which are posted on the web. Common to all concentrations, Engineering Physics students are expected to satisfy the following:

- a cumulative grade-point average of 2.0 or better at the time of graduation,
- a grade of C or better for all courses required for the major,
- fulfill all university-specific degree requirements.

### **Notice of Degree Candidacy**

Early in the semester, during which graduation requirements are expected to be completed, a student must file an on-line *Notice of Degree Candidacy* with the Registrar's Office. Names of candidates are forwarded to the Associate Dean of Engineering for Academics. The candidate names are then passed to the appropriate departments.

In the case of Engineering Physics, it is the Chair of the Engineering Physics Program Committee, who checks each student's academic record against the program's degree requirements using the STAR audit. In addition, the electronic copies of the most recent degree check lists (in pdf format) are available at <http://engineeringphysics.nmsu.edu/forms.html>, and copies are also provided in *Supplementary Documentation*. The result of each record check is then forwarded to the Associate Dean's office for final validation. A Records Specialist in the Associate Dean's office goes through each record check to verify its accuracy. Finally, the Associate Dean goes through the records checks as a third and final verification.

Inconsistencies such as missing classes, unacceptable grades, or invalid elective choices are brought to the attention of the Engineering Physics Committee Chair and an explanation or correction is requested. It is fairly common that inconsistencies are can be resolved with exceptions/substitutions. Once all inconsistencies are resolved, the Associate Dean endorses the record check, signifying that all degree requirements have been met. Unresolved inconsistencies result in the student being informed of the problem and advised they will not graduate until the situation is corrected. In all events, the Registrar is notified of the Associate Dean's decision.

### **F. Transcripts of Recent Graduates**

*The program will provide transcripts from some of the most recent graduates to the visiting team along with any needed explanation of how the transcripts are to be interpreted. These transcripts will be requested separately by the team chair. State how the program and any program options are designated on the transcript. (See 2011-2012 APPM, Section II.G.4.a.)*

Student transcripts from most recent Engineering Physics graduates will be provided upon request. As outlined above, the Engineering Physics degree is presently offered with 4 different concentrations: *Aerospace, Chemical, Electrical or Mechanical Engineering*. While the



graduation requirements differ for each concentration. To date, no Engineering Physics student graduated with the (relatively new) *Chemical concentration* and only one with the (relatively new) *Aerospace concentration*, while approximately 10 students graduated with each the *Mechanical* and *Electrical concentrations*. Transcripts list Engineering Physics as the major for all students, regardless of their particular concentration.