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Although every attempt has been made to keep this handbook up to date and accurate, it is an advising tool and not an official University policy statement. Therefore, in cases where there are contradictions, the Official University rules take precedence over statements in this handbook.

Department of Mechanical Engineering  
August, 2012
I. INTRODUCTION

The graduate program leading to a Master of Science in Mechanical Engineering, at California State University, Los Angeles is designed for engineers who wish to further their proficiency in a particular field of specialization and/or broaden their perspective and knowledge of engineering beyond the Bachelor degree. The program offers an applied curriculum covering advanced courses in fundamental subjects, emerging areas of mechanical engineering, and state-of-the-art computer aided engineering tools with emphasis on a multidisciplinary approach. In addition to a rigorous curriculum, high achieving individuals may engage in cutting-edge applied research within a NASA University Research Center, an NSF Research Center, or other externally funded research projects. With a Master of Science in Mechanical Engineering, engineers will enhance the prospects of their professional career and/or be prepared to continue their education toward a doctoral degree.

The graduate program is organized especially to accommodate the needs of engineers employed full time. The classes applicable toward the graduate degree are offered during late afternoon hours or evenings. Instruction is offered year round on the quarter system. Each of the four quarters that comprise the academic year (Fall, Winter, Spring, and Summer) is 11 weeks in duration.

The University is located at the eastern edge of Los Angeles within a five mile radius of downtown and adjacent to the western part of the San Gabriel Valley. The convenient location allows easy access by freeway and major surface streets, as well as by bus and Metrolink, from all parts of the Greater Los Angeles Area.

Admission to the Program

Admission to the program requires possession of a degree equivalent to CSULA’s Bachelor of Science in Mechanical Engineering and a minimum 2.5 grade point average in the last 90 quarter units attempted for the baccalaureate. Applicants who do not meet the minimum 2.50 grade point average in their last 90 units may be admitted to post-baccalaureate unclassified standing with Special Action Admission until prescribed qualifying courses of at least 14 units, approved by the graduate advisor, have been completed with a minimum 3.0 grade point average.

An applicant with a Bachelor of Science degree in an allied field such as physics, chemistry, mathematics, or another area of engineering may be admitted with unclassified post-baccalaureate standing until prescribed prerequisite courses have been successfully completed.

Program of Study

Upon admission, the new student should make an appointment to see the Mechanical Engineering Graduate Advisor. With the help of the advisor, the student should develop a program of study. The program of study can be changed during the course of study if the need arises, but only after the student submits a petition and the petition is approved. Courses which are not on the student’s program of study will not be counted toward the M.S. degree. Upon advisor approval, a student may transfer up to 13 quarter units of classes applicable toward a graduate degree.
completed at another qualifying institution of higher learning or at CSULA through Open University.

II. TERMINOLOGY - YOUR STATUS

Post-baccalaureate students fit into one of two categories: **Conditionally classified**, and **Classified**. The distinctions have always been important, but have recently become critical as the State of California has tightened up on whom they are willing to financially support in school. The State will only support those seeking an initial Masters degree, and will not support people simply seeking continuing education. It is therefore critical that you “get on the right track” as quickly as possible. Hopefully, the following will clarify the situation.

When you first are admitted to the program, you have conditionally classified student G1 status. It means that you have been admitted but you need to see an adviser in the ME department to select classes and determine whether or not you would need to complete qualifying courses or pre-requisites before your status changes to classified graduate student G2 status.

If your BS degree is in a related field such as mathematics or physics but not in Mechanical Engineering, or is not equivalent to the BSME degree offered by Cal State LA, we may require you to complete certain prerequisite courses before being admitted to our program. These will normally be 300-level courses, though the list might contain a number of 200- or 400-level courses depending on each individual’s specific circumstances. Under certain conditions, you may start on the graduate program prior to finishing the entire list of prerequisite courses. You should discuss this with an adviser. Your grade point average on the prerequisite courses should be at least 3.0 and at least as high as your undergraduate grade point average. Since the prerequisites are considered part of the BS degree requirement, poor performance (i.e., average GPA below 3.0) on the prerequisite courses could lead to a re-evaluation, and we may have to ask you to take qualifying courses. In other words, even though you are admitted with over a 2.5 GPA in the upper division major, it is possible you will need to take qualifying courses.

<table>
<thead>
<tr>
<th>Required Pre-Requisite Courses:</th>
<th>Course</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>CHEM 101</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>MATH 206</td>
<td>4</td>
<td></td>
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<tr>
<td>MATH 207</td>
<td>4</td>
<td></td>
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<tr>
<td>MATH 208</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>MATH 209</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>MATH 215</td>
<td>4</td>
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</tr>
<tr>
<td>PHYS 211</td>
<td>5</td>
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<tr>
<td>PHYS 212</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>PHYS 213</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>CE/ME 201</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>CE/ME 205</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>ENGR 207</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>CE/ME 303</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>ME 306</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>CE/ME 320</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>ME 323</td>
<td>4</td>
<td></td>
</tr>
</tbody>
</table>
Once you have successfully completed all specified conditions (qualifying courses and prerequisite courses), you are ready to become a classified graduate student. The department will normally process this automatically.

Once you are classified, it is time to think about the final category - Advancement to Candidacy. Upon completion of at least 16 units of your graduate program with the grade point average of at least 3.0, you are eligible to advance to candidacy G3 status for the MSME degree. Advancement to candidacy is a requirement to apply for thesis or comprehensive exam, and also to apply for graduation.

III. FINDING AN ADVISER

In an attempt to better serve our undergraduate and graduate ME majors, and to shorten the time between your discovering a problem and getting advice on the solution, the department has set up an “OPEN ADVISING” system. There are many hours during the week (usually over 12) during which you can see a faculty adviser without any appointment. Signs are posted early each quarter listing the open advising hours; each faculty member’s advising hours are posted outside his/her office door and a list of all the faculty members’ hours are posted on the Department bulletin board (outside ET A205). Any of the faculty advisers should be able to help you with your problems or with any necessary forms. Of course, with this open advising system, there may be peak times when a large number of students are seeking advising. If you see a crowd at the faculty member’s door, we suggest you return at the next available time. We try to schedule the hours according to the needs of the students, but we hope you understand that, as in any Engineering problem, trade-offs are involved. Since no appointments are required, there is little control to assure against overload situations.

IV. HOW TO REGISTER

If this is your first registration at CSULA, you must first see an adviser. Following advising, you obtain the department approval to register. Provided you are not trying to take any restricted courses (see description below), you are ready to pay your fees and register. New students are strongly encouraged to attend the University orientation session for new students. At that session, you will receive valuable information about the University and registration. The information you receive at the University orientation session supplements that given by our faculty advisers. You will also perform your first registration as part of the orientation.

Continuing student registration is very simple. You register following instructions in the schedule of classes, and use your GET account to register online. You get immediate verification of your schedule since the computer is adding you to classes immediately upon your request. You must pay fees prior to registration. See the schedule of classes for details.

In an effort to simplify the registration procedure, the Mechanical Engineering department has “unrestricted” most of our classes. This means you can register for them without any specific course approvals provided that you have taken the prerequisites for these courses at CSULA. If prerequisites have been taken elsewhere you would need to contact our ME Department to
approve that you have taken an equivalent course which satisfies the prerequisite and to then issue a permit in GET to override the prerequisite and enable you to register. The restricted classes are the independent research, thesis, and comprehensive exam. As described later in this manual, you must file the necessary forms, meet with an adviser, and secure the necessary signatures before the computer registration system will accept your request to register in these classes.

**Adding** classes is done online using the GET system. You must attend the first class meeting or the instructor can drop you from the class. If the class is full, or once the quarter starts you must obtain the instructor’s permission to ADD. The instructor would give the names of students adding the course to the Department Staff to enter a permit in GET to allow students to register.

**Maximum Study Load:** The University has a maximum study load of 16 units for graduate students. If you wish to take more than the maximum, you would need to file an “Overload Petition Form” signed by the Department Chair and Associate Dean to allow you to register for more than 16 units.

**V. POLICY ON DROPPING CLASSES**

During the first week of the quarter, students may withdraw from any course with no record of the individual course withdrawal on their permanent academic record. After the **no-record drop** deadline, a student may withdraw from any course using the drop form signed by instructor and Department Chair, but the withdrawal will appear as a “W” on the student’s transcript. Forms are available at Administration 146. Complete information about withdrawals, as well as a sample program change form and withdrawal deadlines for each academic quarter, appears in the Schedule of Classes.

**VI. THE GRADUATE PROGRAM**

This section describes the actual graduate program of courses. In addition to courses in the graduate program, you may have to take prerequisite and/or qualifying courses, as described in Section II. Under certain circumstances, the graduate program may contain one or more 400-level courses from the qualifying list (i.e., these can count in both categories). The program may not contain any of the courses from the prerequisite list.

Up to 13 quarter units may be used from coursework completed prior to admission to our program. These can be transfer courses from a recognized university, or they may be courses taken at Cal State LA after award of the BS degree. **No courses taken prior to the award of the BS degree may be used toward fulfillment of the MS program degree requirements.** There are two exceptions to this rule: 1) courses fitting the catalog description, “graduate credit for undergraduate work”. This is a limited category that requires pre-approval, and must occur during the very last quarter as an undergraduate, and 2) courses taken by students admitted in the integrated BS/MS program that have been approved by the advisor and appear on the students official program of study.

**CAUTION:** The Admissions Office sends out tentative letters of acceptance to those in the process of completing their BS degrees. For example, if you are completing your BS degree at Cal State LA in June and apply for MS status in Fall, the acceptance comes before final verification of your graduation. If it turns out that you do not receive the BS on schedule (e.g., you do not complete one requirement), your MS admission is canceled and any courses you have taken cannot count toward the MS. This is very important! Even though you receive a nice
congratulation letter on your admission, and the computer lists you as a graduate student, if a problem develops with your BS you may be taking courses that will not count on the MS. If you have questions, see an adviser.

Before you begin your first quarter as a graduate student, you make up a program in consultation with an adviser. Up to 13 units can be transfer courses, either taken before CSULA Admission as described above, or taken at another university after admission. The maximum total of 13 units applies to the sum of all transfer courses. Any courses taken in continuing education status at Cal State LA are considered transfer courses and are included in the 13 unit limitation.

**List of Courses applicable to the M.S. Degree in Mechanical Engineering**

The following courses offered by the Mechanical Engineering Department are applicable toward fulfilling the requirements for an M.S. degree in Mechanical Engineering provided they are not completed during the course of undergraduate study (i.e., the same course cannot be counted toward an undergraduate and a graduate degree).

A brief description of the courses and the necessary prerequisites are published in the CSULA General Catalog. Students should consult the Department Office and the Schedule of Classes for the quarter, date and time when a particular class is offered. For more information on each course and/or research opportunity in a particular area, students should contact faculty with expertise in that area.

**MACHINE DESIGN, APPLIED MECHANICS**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>ME 402</td>
<td>Advanced Mechanics of Materials</td>
<td>4</td>
</tr>
<tr>
<td>ME 411</td>
<td>Vibrational Analysis I</td>
<td>4</td>
</tr>
<tr>
<td>ME 412</td>
<td>Strength of Materials Laboratory II</td>
<td>1</td>
</tr>
<tr>
<td>ME 414</td>
<td>Machine Design II</td>
<td>4</td>
</tr>
<tr>
<td>ME 421</td>
<td>Dynamics of Mechanisms</td>
<td>4</td>
</tr>
<tr>
<td>ME 423</td>
<td>Introduction to Finite Element Method</td>
<td>4</td>
</tr>
<tr>
<td>ME 501A</td>
<td>Advanced Mechanics of Particles</td>
<td>4</td>
</tr>
<tr>
<td>ME 501B</td>
<td>Advanced Mechanics of Rigid Bodies</td>
<td>4</td>
</tr>
<tr>
<td>ME 503</td>
<td>Design of Mechanical Systems and Products</td>
<td>4</td>
</tr>
<tr>
<td>ME 511</td>
<td>Vibrational Analysis II</td>
<td>4</td>
</tr>
<tr>
<td>ME 514</td>
<td>Fatigue and Failure in Engineering Design</td>
<td>4</td>
</tr>
</tbody>
</table>

**MANUFACTURING AND MATERIALS**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>ME 428</td>
<td>Automation and Manufacturing</td>
<td>4</td>
</tr>
<tr>
<td>ME 430</td>
<td>Properties and Selection of Engineering Materials</td>
<td>4</td>
</tr>
<tr>
<td>ME 431</td>
<td>Metallography Laboratory</td>
<td>1</td>
</tr>
<tr>
<td>ME 481</td>
<td>Introduction to Robotics</td>
<td>4</td>
</tr>
<tr>
<td>EE/ME 491</td>
<td>Robotics Laboratory</td>
<td>1</td>
</tr>
<tr>
<td>ME 514</td>
<td>Fatigue and Failure in Engineering Design</td>
<td>4</td>
</tr>
<tr>
<td>ME 528</td>
<td>Metalforming Science and Applications.</td>
<td>4</td>
</tr>
<tr>
<td>ME 529</td>
<td>Machining Science and Applications</td>
<td>4</td>
</tr>
<tr>
<td>ME 530</td>
<td>Near-Net-Shape Manufacturing and Surface Treatment</td>
<td>4</td>
</tr>
<tr>
<td>ME 531</td>
<td>Processing of and Design with Modern Engineering Materials</td>
<td>4</td>
</tr>
</tbody>
</table>

**THERMAL AND FLUID SCIENCES**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>ME 406</td>
<td>Heat Transfer II</td>
<td>4</td>
</tr>
<tr>
<td>ME 407</td>
<td>Design of Thermal Systems</td>
<td>4</td>
</tr>
</tbody>
</table>

4/17/2012
<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ME 408</td>
<td>Fluid Mechanics II</td>
<td>4</td>
</tr>
<tr>
<td>ME 413</td>
<td>Fluid Mechanics Laboratory II</td>
<td>1</td>
</tr>
<tr>
<td>ME 415</td>
<td>Air Conditioning</td>
<td>4</td>
</tr>
<tr>
<td>ME 416</td>
<td>Energy Systems</td>
<td>4</td>
</tr>
<tr>
<td>ME 418</td>
<td>Renewable Energy and Sustainability</td>
<td></td>
</tr>
<tr>
<td>ME 504</td>
<td>Thermal Radiation</td>
<td>4</td>
</tr>
<tr>
<td>ME 505</td>
<td>Heat Conduction</td>
<td>4</td>
</tr>
<tr>
<td>ME 506</td>
<td>Heat Convection</td>
<td>4</td>
</tr>
<tr>
<td>ME 525</td>
<td>Computational Fluid Mechanics</td>
<td>4</td>
</tr>
</tbody>
</table>

**Aerospace and Control Engineering**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ME 403</td>
<td>Aerodynamics</td>
<td>4</td>
</tr>
<tr>
<td>ME 404</td>
<td>Compressible Aerodynamics</td>
<td>4</td>
</tr>
<tr>
<td>ME 410</td>
<td>Control of Mechanical Systems</td>
<td>4</td>
</tr>
<tr>
<td>ME 422</td>
<td>Optimization of Engineering Systems</td>
<td>4</td>
</tr>
<tr>
<td>ME 508</td>
<td>Compressible Fluids</td>
<td>4</td>
</tr>
<tr>
<td>ME 521</td>
<td>Dynamic Systems Analysis</td>
<td>4</td>
</tr>
<tr>
<td>ME 522</td>
<td>Optimal Control of Mechanical Systems</td>
<td>4</td>
</tr>
</tbody>
</table>

**Additional Courses**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ME 409</td>
<td>Mechanical Engineering Analysis (Required for all MS students)</td>
<td>4</td>
</tr>
<tr>
<td>ME 454</td>
<td>Special Topics in Mechanical Engineering</td>
<td>1-4</td>
</tr>
<tr>
<td>ME 459</td>
<td>Rehabilitation Design and Internship</td>
<td>4</td>
</tr>
<tr>
<td>ME 419</td>
<td>Computer Aided Mechanical Engineering</td>
<td>4</td>
</tr>
<tr>
<td>ME 554</td>
<td>Special Graduate Topics in Mechanical Engineering</td>
<td>4</td>
</tr>
<tr>
<td>ME 559</td>
<td>Advanced Rehabilitation Design and Internship</td>
<td>4</td>
</tr>
<tr>
<td>ME 596</td>
<td>Comprehensive Examination</td>
<td>0</td>
</tr>
<tr>
<td>ME 597</td>
<td>Graduate Research</td>
<td>1-5</td>
</tr>
<tr>
<td>ME 598</td>
<td>Graduate Directed Study</td>
<td>1-4</td>
</tr>
<tr>
<td>ME 599</td>
<td>Thesis</td>
<td>4</td>
</tr>
</tbody>
</table>

In addition to the above courses, the graduate advisor may allow a student to select a limited number of courses in other engineering disciplines or outside of engineering with consistent with an approved plan of study.

**Webfolio Requirements:**

Each student must complete and electronically submit the materials listed and described below to the Department Coordinator before you will be allowed to enroll in the comprehensive exam (ME596) or thesis (ME599 or ME900). The materials should be e-mailed to Vanessa Cobian at vcobian@calstatela.edu with the subject heading “New Engr Grad Req (ME596/599/900)”.

1. Resume

2. Life-long learning essay
   Please write a one-page statement about the appreciation for “life-long learning you have gained from your degree program at Cal. State LA. And address the following questions:
a. Do you see the benefit for continuous learning throughout your life time?
b. How has your degree program shown/demonstrated the benefit of life-long learning?
c. What are your long-term professional and personal goals?
d. How will continuous learning throughout your lifetime allow you to achieve your long-term goals?
e. What types of formal (college degrees) and informal (seminars, self-study) future learning avenues are you planning to pursue?

3. Lab/project report
   Submit a lab or project report from any of your science or engineering courses that were completed during your graduate or undergraduate program. Lab reports are preferred.

4. Contemporary issues essay
   Write a one-page paper discussing how the knowledge of current events and contemporary issues (non-engineering related) will benefit you in your engineering career.

5. Abstract of a design project
   Please submit an abstract of a design project that was completed during your graduate or undergraduate program

VII. PREREQUISITES

All of the prerequisites can be found by referring to the current University catalog or to updated supplements issued by the department. As courses evolve, prerequisites can sometimes change. You are responsible for having the prerequisites currently in effect for the courses you are taking. This may not seem fair since it may require altering your projected program from time to time. However, the alternatives are for us to never change course content, or for you to enter a class without the proper preparation. Neither alternative is acceptable. We endeavor to make prerequisite changes only when absolutely necessary.

VIII. WRITING REQUIREMENT

Unless you are exempt (see next paragraph) you must take the upper division writing proficiency exam (WPE) in your very first quarter as a graduate student!!! It is your responsibility to take the exam at the proper time. You register for the exam as UNIV400, which is listed in the schedule of classes along with the other “UNIV” courses. A permit to enroll in UNIV 400 is obtained from the Testing Center located in the Library South Wing. You will not be allowed to enroll in the Comprehensive Exam or Thesis courses unless you pass the Writing Proficiency Exam.

There are only two ways that you may be exempt from taking the writing exam. The first is if you have passed a writing proficiency exam at an accredited college or university where the language of instruction is English. This must be clearly indicated on your transcript. The second is if you hold an earned doctorate from an accredited college or university where the primary language of instruction is English.

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If you fail the exam the first time, you must either retake the exam or enroll in UNIV401, the upper division writing proficiency course. You must meet with a consultant in the University Writing Center who will help you decide which course of action to take to fulfill the WPE requirement. In either case, the requirement must be satisfied within the first three quarters or prior to the completion of 16 units, whichever comes later. Check the schedule of classes for details. Help is also available in the University Writing Center to correct deficiencies in your writing. You must be able to write effectively in order to succeed in the profession.

IX. COMPREHENSIVE EXAMINATION/THESIS

Every graduate student must choose one of two options, comprehensive examination or thesis. These are described below:

### ME Graduate Program Advisement

<table>
<thead>
<tr>
<th>Thesis Course</th>
<th>Units</th>
<th>Comp Exam Course</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>500-Level Courses</td>
<td>16</td>
<td>500-Level Courses</td>
<td>24</td>
</tr>
<tr>
<td>400-Level Courses</td>
<td>16</td>
<td>400-Level Courses</td>
<td>16</td>
</tr>
<tr>
<td>ME 409</td>
<td>4</td>
<td>ME 409</td>
<td>4</td>
</tr>
<tr>
<td>ME 597</td>
<td>1</td>
<td>ME 598</td>
<td>1</td>
</tr>
<tr>
<td>ME 598</td>
<td>8</td>
<td>ENGR 596</td>
<td>0</td>
</tr>
<tr>
<td>ME 599 (CR/NC) - every quarter beyond above reqs</td>
<td>4</td>
<td>No Limit</td>
<td></td>
</tr>
</tbody>
</table>

| Total Units | 49 |
| Total Units | 45 |

- 500-level courses use a 1.5 multiplier for financial aid, so 2 500-level courses meets the 12 unit minimum requirement
- Students take 598 to perform research
- Students take 599 and 900 after all other requirements are complete

**Comprehensive Examination:**

- Exam Description:
  - Length: 3 hours
  - Number of Questions: 10 Minimum
  - Estimated Time Required for Each Question: 45 minutes
  - Number to Be Attempted by Student: 4
  - Grading Criteria Per Question: Each Question Graded on a Pass/Fail Basis
  - Question Evaluator: The Faculty Member Who Submitted Question

**Passing Criteria with No Committee action:**

At Least 3 Questions are Graded Pass

**Performance Evaluation if Less than 3 Questions are Graded pass:**

- Overall Exam Evaluation is Performed by Department Level Committee formed as needed
• Committee Composed of 3 Faculty Members
  o Department Chair
  o 2 Other Faculty
➢ Evaluation Criteria
• If 2 are Graded Pass, the Committee May:
  o Re-evaluate the Student’s Performance on the Failed Questions
  o Invite the Student to Participate in an Oral Exam Covering the Topics of the Two Failed Questions
    • Successful in Passage of Oral Exam: Student Passes Comp Exam
  o Inform the Student that He/She Must Attempt the Entire Exam Again
• The Committee will Deem the Student Ineligible to Complete the Degree if:
  o Fewer than 2 Questions are Graded Pass on an Attempted Exam
  o Two Attempts at the Exam have been Determined to be Failures by the Department Evaluation Committee

Thesis: Thesis is a valuable choice for graduate students. It can be essential for those planning to pursue a doctoral degree (Ph.D.). However, those with limited ability in English, and those employed full-time are advised to carefully investigate whether the thesis option is appropriate. Discuss this with an adviser.

Thesis normally consists of a total of 13 units, which counts toward the 24-unit minimum requirement of 500-level courses in the specialization. The units are distributed as 1 unit of ME597 (graduate research), 8 units of ME 598(graduate direct study), and 4 units of ME599 (thesis). Typically, the units of research are spread over two quarters, and the thesis takes place in one quarter. You should enroll in ME599 during the quarter that you plan to complete your thesis.

Therefore, a minimum of three quarters should be allocated to complete a thesis. There are detailed requirements on the link http://www.calstatela.edu/library/guides/thesis-submission.htm regarding preparation of the manuscript and submission to the library. If you don’t follow all of those instructions, your graduation could be delayed.

A graduate student submitting a Master’s Thesis to the library to finish up all MSME work must be enrolled in CSULA during that quarter in order to graduate.

Effective Fall 2011, any student submitting a thesis should make an oral presentation with electronic slides (e.g., using PowerPoint) of his/her work to an audience composed of department faculty, possibly other students, and when possible the department industry advisory board members. The department will schedule the event sometime during the finals week of the quarter.

X. PROFESSIONAL ACTIVITIES

The ME Department, faculty maintain high levels of student/faculty interaction, student advising and counseling, university service activities, professional development, and interactions with industrial and professional practitioners and employers of ME graduates. This is borne out by the range of activities in these areas that are listed by the faculty in their curricula vitae in All of the faculty are members of one or more professional societies, such as, ASME, ASEE, SAE, SME, AIAA, and SAMPE. Many have presented technical papers at conferences or published technical papers in refereed journals.

Our students have ample opportunities to interact with the ME faculty in the classroom or laboratory. ME students also have ample opportunities to interact with the ME faculty outside the
classroom. For example, Professors Guillaume, Pacheco, Pham, and Wu have sizeable grants, and they employ both undergraduate and graduate students in their research projects. Other faculty with smaller grants also employ students. Specifically these research projects include:

**NASA University Research Center**

In 2003, NASA awarded the university a five-year $6M University Research Center (URC) grant. This was renewed in 2008 for another 5 years for an additional $5M. The URC is primarily monitored by the NASA Dryden Flight Research Center. In addition, the URC has a close collaboration with Boeing Company and Northrop Grumman Corporation. The major areas of research in the URC are directly related to the missions of the Aeronautics Research Mission Directorate (Uninhabited Aerial Vehicles (UAVs), and Combustion) and Exploration Systems Mission Directorate (James Webb Space Telescope), addressing and supporting some of these missions’ key challenges. To address the technology challenges of both Directorates, the SPACE center utilizes undergraduate students to conduct research and development in the following areas:

- Intelligent Flight Control, Autonomous Control, Formation Flying
- Uninhabited Air Vehicles (UAV) Development
- Wind-Tunnel Testing and Validations
- Optimization of Combustion and Propulsion Systems
- Bio-derived Liquid Fuel and Solid Propellant Development
- Thermal Analysis of Space Systems
- Space Telescope Technology, Precision Pointing, System Identification
- Decentralized Control, Failure Analysis and Reconfigurable Control
- Ubiquitous Computing and Embedded Architectures.

In addition to being an undergraduate rigorous research opportunity for ME students, the URC has generated interest in and has provided impetus for curriculum in aerospace engineering. Several aerospace related courses are currently under development. The graduate program in Mechanical Engineering has thrived as the result of the URC. Undergraduate ME students who are hired at URC give make a pledge to continue for their Masters degree. An overwhelming majority have fulfilled their commitment, some have continued to a Ph.D. program at one of the collaborating universities. A chapter of AIAA has been established on campus, students participate in writing and presentation of technical papers in professional forums. URC graduates upon graduation have multiple offers, some have ended up working NASA and major aerospace firms. Thanks to the URC grant, the supersonic wind tunnel in the aerodynamics lab has been recently renovated to update its sensors and controls.

**NSF Center for Energy and Sustainability**

NSF awarded the University $5M in 2009 to fund the Center for Energy and Sustainability (CEaS). This research center is highly multi-disciplinary, composed of 23 faculty across 10 departments. The PI and Program Director is Civil Engineering Professor Crist Khachikian, and the Co-PIs are Mechanical Engineering Professors Trinh Pham (also Director of Education) and Darrell Guillaume, and Chemistry Professors Frank Gomez and Feimeng Zhou. The CEaS mission is to conduct research that promotes energy efficiency, diversity, and sustainability, while training a workforce that will catalyze change in the energy field. The Center also aims to engage policymakers and educational institutions to educate the public about energy issues, and ensure that widespread adoption and implementation of new technologies is possible. The combined elements of the CEaS mission have resulted in six project foci, led by the Center faculty:
Advanced Materials, Biofuels and Combustion, Carbon Sequestration, Fuel Cells, Modeling (mathematical), and Policy and Education.

Since the Center was created, 3 students have already graduated and entered Ph.D. programs: Mechanical Engineering at UCI, Civil Engineering at UCLA, and Geology at Colorado School of Mines; 1 student has graduated with an M.S. in Mechanical Engineering and is working as a design engineer at LA Turbine; 3 additional students have received their M.S. degrees and 2 students their B.S. degrees under the Center’s research supervision. Currently, CEaS is supporting 15 M.S. students and 8 B.S. students in engineering and the sciences.

NSF-SBIR Awards

In 2009 and 2010, Mechanical Engineering Associate Professor Arturo Pacheco-Vega (PI), in collaboration with Professors Adel Sharif, Gustavo Menezes and Crist Khachikian, received two Small Business Innovation Research (SBIR) two-year awards totaling $300,000. The first award titled “Funding Request for Educational Particle Image Velocimetry,” resulted from collaboration with scientists from the company Interactive Flow Studies in Rochester, MN with the idea of analyzing new instructional strategies and experimental system to improve learning of abstract topics in fluid mechanics. The second grant entitled “A novel Imaging Device for Infrared and Terahertz Radiation Beams Utilizing Thermochromic Liquid Crystal Materials,” was partnered with physicists from the company RadiaBeam Technologies with the objective of exploring the redesign of a terahertz detector camera for high-energy physics research. Three graduate and three undergraduate students have participated in these projects.

NSF- Awards

Mechanical Engineering Associate Professor Arturo Pacheco-Vega is the Co-PI, along with Professors Crist Khachikian (PI) and Don Maurizio (Co-PI), on a 3-year $1,700,000 NSF grant titled “Renovating a Core Facility to Support Research in the Newly Funded CREST Center for Energy and sustainability,” that started in September of 2010. This grant is focused on renovation of the existing facilities for the engineering laboratories and corresponding development of a state-of-the-art core facility for energy and sustainability research which will be highly conducive to multidisciplinary, team-oriented research in science and engineering.

Inflatable Structures Research

Mechanical Engineering Professor Lih-Min Hsia worked, in collaboration with engineers at the Jet Propulsion Laboratory, on the development of inflatable structures technology from 1999 to 2009. During the ten-year period he received grants and contracts from JPL totaling $700,000. The main thrust of this work was to develop light weight inflatable/self-rigidizable aluminum laminate booms as the main load-carrying members of large space structures. He and a group of CSULA students used this technology to design and build several square membrane-type antennas ranging in size from one and half meters to seven meters. The completed projects include: “The 3-Meter Ka-band Inflatable Microstrip Reflectarray Engineering Model Development,” “Development of a Membrane Based Reflector for a Dual Frequency, Ka/Ku Band Radar,” “The Development of Seven-Meter Reflectarray Antenna,” and “NEXRAD in Space.” In 2005, the group received the NASA Group Achievement Award for the work done. There were as many as twenty five Mechanical Engineering undergraduate and graduate students involved in the course of the research. Five of them were hired for full-time permanent positions at JPL.

Materials Research Laboratory (MRL)
A new research laboratory is being developed for conducting research in materials science for faculty members across the campus interested in research in materials science. MRL is equipped with state-of-the-art instruments for conducting research in Materials Science. MRL’s precision instruments include optical and electron microscopes, x-ray machine, and other characterization tools. Currently, the lab is used for research on electronic properties of materials and development of sustainable structural materials. Two graduate students and two undergraduate students are conducting research in the MRL.

XI - APPLYING FOR GRADUATION

Well, you look like you are going to make it. You have followed the instructions in this handbook, and can now see the light at the end of the tunnel. You appear to be close to graduation.

But graduation does not happen automatically. YOU MUST APPLY for it. Application forms are available in Administration 146 during the filing periods for graduation as listed in the class schedule. You fill out the application form, take it to the cashier and pay the fee, and then return it to the department Staff to process. The deadlines are given in the instructions accompanying the form and in the Schedule of Classes. Generally, you must apply about 6 months before you expect to graduate. Do not wait until the last minute!

XIII - ACADEMIC STANDARDS

You are joining an academic community. Along with the privileges of membership go certain obligations. Failure to meet established standards will result in your being expelled from the university.

We hope that behavior standards never become an issue, but it is important that you prove worthy of the trust we place in you. Honesty is extremely important both for the operation the university and for your personal development. Any form of cheating on examinations will lead to one or more serious sanctions, including dismissal from the university. The faculty is committed to carefully monitoring examinations and to taking strong action if any dishonest activity is detected. Details are given in the University catalog. Note that plagiarism in writing papers is a form of cheating. Read the section of the catalog, and ask the faculty if you have any questions.

In order to be in good academic standing, you must maintain a minimum of a B average. If your grade point average on your program falls below B (3.0), it means that you are not meeting the academic standards of the department, and you are in danger of not being permitted to continue toward your degree. If your average falls below B, you are immediately placed on academic (scholastic) probation, which represents a form of final warning. If after being placed on academic probation you do not raise your average to 3.0 after completion of 16 units or two quarters in residence, whichever comes later, you will be disqualified from pursuing the MS degree in Mechanical Engineering.

If your grade point average falls more than 9 grade points below B, you will be disqualified from pursuing the MS degree in Mechanical Engineering. Disqualification from the MS program is permanent. There are no second chances. You may be admitted to another degree program on this campus on the recommendation of the new department and of the graduate dean.
The Master of Science degree in Mechanical Engineering at California State University, Los Angeles, is designed for engineers who wish to prepare for advancement in their profession, whether in management, research and development, sales, manufacturing, construction, consulting, teaching, or any of the expanding number of fields requiring highly educated Mechanical engineers.

The graduate program in Mechanical Engineering at Cal State L.A. is organized to accommodate the need of engineers employed full time as well as those interested in accelerating their programs by attending full time. Courses are scheduled both during the day and at hours to suit the needs of those working in the profession.

Instruction is offered year round on the quarter system. Each of the four quarters that comprise the academic year (winter, spring, summer, fall) is 11 weeks in duration. Students may accelerate their progress by attending all four quarters.

The university is located at the eastern edge of Los Angeles and adjacent to the western San Gabriel Valley. The convenient location ensures easy access by freeway and major surface streets, as well as by bus & metro-line from all parts of the Greater Los Angeles metropolitan area.

Admission to the Graduate Program

Applicants to the program must have a Bachelor of Science degree in Mechanical Engineering (from an accredited college or university) with a minimum 2.5 grade point average (A = 4.0) in the last 90 quarter units attempted in the undergraduate program.

Applicants with a Bachelor of Science degree in an allied field (e.g. Computer Science, Physics, Mathematics) may be admitted to conditionally classified graduate standing until prescribed prerequisites have been successfully completed. The GRE is not required for entering the program.

All students must pass the Writing Proficiency Examination prior to advancement to candidacy status.

Degree Requirements

A total of 45 quarter units is required, including at least 24 units of 500 level courses. A minimum of a B, 3.0 grade point average is required. Completion of the program requires the writing of an acceptable thesis or successful completion of a comprehensive examination.

For Further Information

Further information about the program in Mechanical Engineering may be obtained from the Department of Mechanical Engineering, (323) 343-4490. Admission information and application forms may be obtained online at: http://www.csumentor.edu/AdmissionApp/