on all completed work appearing on the program.

3. A minimum grade point average of 3.0 in all required graduate coursework from the date of commencing the first course of the proposed master's degree program.

4. Departmental recommendation for advancement to candidacy.

5. Satisfactory completion of the Graduate Writing Skills Requirement.

Nondegree students. Students with a bachelor's degree may take graduate courses (concurrently with regular students) for credit or audit. Prior approval is required.

See the catalog Web site for core courses that may be applied to the programs. Visit *www. csufresno.edu/catoffice/current/engcore.html.*

Accelerated Graduate Programs

The accelerated M.S. program will provide a path to students who are talented and want to acquire additional knowledge in specialized areas of interest, as a continuation of their B.S., within a short period of time. The benefits to the students that participate in the program are as follows:

- More efficient use of their fourth academic year leading to a baccalaureate degree
- Ability to focus more rigorously on their areas of professional practice, culminating in a master's degree
- Opportunity to receive both B.S. and M.S. in five years

Eligibility: A student who has completed 75 units of required and elective G.E., math, science, and engineering coursework required for his/her undergraduate program may apply to the accelerated graduate program.

Application Materials: To apply to the accelerated graduate program, a student must submit the following:

- Application form
- A detailed statement of purpose
- Two letters of recommendation, at least one from a faculty member of the program

Timing of Application: Application may be made no sooner than at the beginning of the sixth semester of study of an undergraduate degree program. Students officially enter the program no earlier than the seventh semester of an eight-semester undergraduate program.

Requirements: The applicants must satisfy the following requirements:

- Overall GPA of 3.0 or greater at the time of application
- Satisfactory GRE scores (consult program advisers)
- Complete all the courses specified by the program by the end of the sixth semester with GPA of 3.0 or greater
- Complete no less than 30 units of coursework in residence by the end of the sixth semester
- Complete undergraduate writing requirement by the end of the sixth semester
- Complete all G.E. requirements prior to taking 200-level courses

Progress Toward Awarding of Degree: Students can take up to 10 units of courses that qualify for the M.S. program (but no more than 6 units of 200-level courses per semester) before completion of the B.S. program. Students shall not proceed with further graduate-level coursework until they have obtained the classified standing. The classified standing can be obtained by filing the appropriate form with the Office of Graduate Studies after the completion of the B.S.

Awarding of Degree: Students must meet all programmatic requirements for each degree. This implies that no coursework, project, independent study, etc., may be simultaneously applied toward meeting the requirements of the B.S. and M.S. Students must complete the requirement for the B.S. at least two semesters prior to completing the requirement for the M.S.

GRADUATE COURSES

(See *Catalog Numbering System.*)

Engineering (ENGR)

ENGR 200. Seminar in Engineering (1)
Orientation to the graduate program, exposure to various areas within electrical engineering and mechanical engineering, introduction to research methods, and discussion of project and thesis topics. (Formerly ENGR 291T)

ENGR 201. Systems Modeling and Realization (3)
Prerequisites: graduate standing. Advanced software and hardware engineering tools and their applications; instrumentation and experimental measurements; transducers; analog and digital signal conditioning; instrumentation amplifiers; signal reconstruction; actuators; dynamic systems modeling; realization of models; spectrum analysis; real-time computations; data analysis. (2 lecture, 3 lab hours) (Formerly ENGR 291T)

ENGR 202. Applied Engineering Analysis (3)
Study of analytical tools used in the analysis and modeling of applied engineering systems, in addition to the use of simulation software such as MATLAB. Emphasis is placed on solving problems tied to direct applications within the engineering disciplines.

ENGR 205. Computing in Engineering Analysis (3)
Prerequisite: a first course in numerical analysis at the graduate level. Solution of engineering problems using digital computation. Modeling of engineering systems for numerical analysis.

ENGR 206. Probability Theory and Statistical Analysis (3)
A first course in probability theory and statistical analysis at the graduate level. Finite sample spaces, conditional probability and independence, one-dimensional random variables, functions of random variables, two- and higher-dimensional random variables, poisson and other discrete random variables, continuous random variables, moment-generating function, reliability theory, sums of random variables, samples and sampling distributions, estimation of parameters, testing hypothesis.

ENGR 210. Linear Control Systems (3)
A first-year graduate course covering the analysis, synthesis, and performance of linear control systems. Partial fraction expansion, Routh's criterion, the impulse function. Basic servo characteristics and types, block diagrams, transfer functions. A detailed treatment of the root locus method for analysis and synthesis. Frequency response, logarithmic and polar plots, Nyquist's criterion, stability characteristics, phase margin and gain margin.

ENGR 212. Advanced Control Systems (3)
Prerequisite: ENGR 210 or permission of coordinator. Describing function analysis of nonlinear control systems; phase-plane analysis; Liapunov stability analysis; discrete-time systems; z-transform-method; linear stochastic systems; application of statistical design principles; optimal and adaptive control systems; digital control systems.

For a complete listing and descriptions of all graduate courses, see department pages.

Engineering