



PRELIMINARY
M.S. & PhD Coursework Planning Matrix and Record of Study

Student's Name: _____

Option: _____ Year entered Caltech: _____

Instructions:

Use this form to plan out your coursework before registering for courses in your first academic year. List all graduate courses you plan to take as part of your Ph.D. program (including courses to be taken for your possible M.S. Degree). In the Term column, list the course number and units. You must register for a minimum of 36 units per term, including the summer quarter. See other side and the Catalog for details on tracks to be covered and restrictions. THE STUDENT IS RESPONSIBLE FOR OBTAINING INTERIM ADVISOR SIGNATURE AND RETURNING COMPLETED FORM TO THE OPTIONS MANAGER (314 Gates-Thomas) BY OCTOBER 15. Any future changes require approval and signature of your Advisor and Option Rep.

Prior Degrees:

Bachelor: Institution: _____

Year: _____

Master: Institution: _____

Year: _____

Other: _____ Institution: _____

Year: _____

See backside for coursework suggestions

Masters Categories	PhD Categories	Year 1			Preliminary Year 2 and beyond			Total # of PhD Units
		Fall Term (Course # & Units)	Winter Term (Course # & Units)	Spring Term (Course # & Units)	Fall Term (Course # & Units)	Winter Term (Course # & Units)	Spring Term & beyond (Course # & Units)	
Graduate Level Courses 100 or above	Core Subjects (See back of the form)							
	Elective Courses (See back of the form)							
	Graduate Level Courses 101 or above							
								(108)
Math / Intro. Math	Math/ Advanced Math (27 units)							Advanced Math (27)
Graduate Eng. Seminar (Min 3 Units)	Graduate Eng. Seminar (Min 6 Units)							(6)
Research	Research			Summer Term			Summer Term	(54)
MASTERS 138 units	PhD 195 units							
APPROVED BY:								
Interim Advisor's Signature _____ Date _____								
Option Rep.'s Signature _____ Date _____								

The signatories agree that the coursework listed meets the specific course requirements for the Ph.D. in Mechanical Engineering, Civil Engineering or Applied Mechanics, provided that the student takes and passes the courses with a grade of at least C.

Refer to the current Caltech catalog for details

**APPLIED MECHANICS & CIVIL ENGINEERING
PhD COURSEWORK REQUIREMENTS – 195 units**

AM / CE Core Subjects (45 units): Course work in core subjects selected from the list below; pass with a grade of at least C: Ae/Aph/CE/ME 101abc, Ae/AM/CE/ME 102abc, AM/CE 151, Ae/Ge/ME 160ab, ME/CE 163, Ae/CE 165ab, ME/CE/Ge 174, CE 181ab, Ae/AM/MS/ME 213, Ae/AM/CE/ME 214, Ae 220, Ae/CE 221, Ae/AM/ME 223, AM/CE/ME 252, ME/Ge/Ae 266ab.

The student may petition the mechanical and civil engineering option representative to accept alternate subjects or areas. These changes should retain core applied mechanics knowledge, should not be a sub-specialty of one of the listed areas, and should represent sufficient breadth. The approval is not automatic; such petitions are submitted rarely, and many have been denied in the past. The petition must be submitted to the option representative and approved before the student registers for the course.

Electives or Minor (63 units): Additional engineering or science courses with course number 101 or above, except seminar or research courses. Pass with a grade of at least C, courses that are approved by the Thesis Advisory Committee. These courses are intended to provide further depth and incorporate breadth. These units can be used to satisfy a minor requirement in another option.

Advanced Mathematics or Applied Mathematics (27 units): Pass with a grade of at least C, chosen in consultation with adviser from the following list: ACM 101 or higher, CDS 232, Ma 108 or higher, Ph 129. The requirement in mathematics is in addition to the requirements above.

Graduate Engineering Seminar (6 units): Six terms of AM/CE/ME 150abc, within twelve terms or 3 years in residence at Caltech.

Research (54 units): Successfully complete at least 54 units of research and demonstrate satisfactory research progress.

The requirement of a minimum grade of C will be waived for an advanced course which is offered only pass/fail. The faculty will evaluate the student's research progress, class performance, adviser's input, and oral candidacy exam results to determine whether a student will be admitted to or be able to maintain candidacy for the Ph.D. degree.

AM / CE MASTERS REQUIREMENTS – 138 Units

AM / CE core – (45 units) These units should provide a solid base for the student's engineering interest. The courses should be selected from the Core AM/ CE subjects listed under the Degree of Doctor of Philosophy Description and Requirements section.

Math, engineering, and research electives (63 units) except seminar courses cannot be included. Research up to a maximum of 27 units.

Free electives (27 units) Any course with a number of 100 or greater, may be selected, except that research units and seminar courses cannot be included.

Graduate Engineering Seminar, AM/CE/ME 150 abc (3 units).

Refer to the current Caltech catalog for details

**MECHANICAL ENGINEERING
PhD COURSEWORK REQUIREMENTS – 195 units**

ME Core Subjects (54 units): Course work in core mechanical engineering subjects selected from the courses below. Pass with a grade of at least C, 36 units must be in a single track (Depth requirement). An additional 18 units must be from the courses below but can be in any track, including the chosen Depth track.

Tracks:

Thermal-fluid sciences: Ae/Aph/CE/ME 101abc, Aph 105 Aph 115-116, Ae/ME 118, ME119, Ae/ME 120, Ph 127abc, ME/CE 163, ChE 164-165

Mechanics of solids, structures, and materials: Ae/AM/CE/ME 102abc, Ae/Aph 104 abc, AM/CE 151, Ae/Ge/ME 160ab, ME/CE 163, Ae/CE 165ab, ME/CE/Ge 174, Ae/AM/MS/ME 213, Ae/AM/CE/ME 214, Ae 220, Ae/CE 221, Ae/AM/ME 223, AM/CE/ME 252, ME/MS 260, ME/Ge/Ae 266ab

Robotics, Controls and Dynamics: CDS 112, CDS 131, ME/CS/EE 133 abc, CDS 141, CMS/CS/CNS/EE/IDS 155, CDS 231, CDS 232, CDS 233

The student may petition the mechanical and civil engineering option representative to accept alternate subjects or areas. These changes should retain core mechanical engineering knowledge, should not be a sub-specialty of one of the listed areas, and should represent sufficient breadth. The approval is not automatic; such petitions are submitted rarely, and many have been denied in the past. The petition must be submitted to the option representative and approved before the student registers for the course.

Electives or Minor (54 units): Additional engineering or science courses with course number 101 or above, except seminar or research courses. Pass with a grade of at least C, courses that are approved by the Thesis Advisory Committee. These courses are intended to provide further depth and incorporate breadth. These units can be used to satisfy a minor requirement in another option.

Advanced Mathematics or Applied Mathematics (27 units): Pass with a grade of at least C, chosen in consultation with adviser from the following list: ACM 101 or higher, CDS 232, Ma 108 or higher, Ph 129. The requirement in mathematics is in addition to the requirements above.

Graduate Engineering Seminar (6 units): Six terms of AM/CE/ME 150abc, within twelve term or 3 years in residence at Caltech.

Research (54 units): Successfully complete at least 54 units of research and demonstrate satisfactory research progress.

The requirement of a minimum grade of C will be waived for an advanced course, which is offered only pass/fail. The faculty will evaluate the student's research progress, class performance, adviser's input, and oral candidacy exam results to determine whether a student will be admitted to or be able to maintain candidacy for the Ph.D. degree

ME MASTERS REQUIREMENTS – 138 Units

Graduate mechanical engineering core (54 units). These units should provide a solid base for the student's engineering interest. The courses should be selected from the Core ME subjects listed under the Degree of Doctor of Philosophy Description and Requirements section.

Mathematics, engineering, and research electives (54units). Courses may be taken in Ae, AM, ACM, ME, MeE, MS, EE, ESE, APh, CDS, CS, ChE, and CNS, except seminar courses. Students are encouraged to take research units, ME 300, up to a maximum of 27.

Free electives (27 units). These units may be selected from any course with a number of 100 or greater, except that research units and seminar courses may not be included.

Graduate Engineering Seminar, AM/CE/ME 150 abc (3 units).