UCMERCED
STUDENT ADVISING & LEARNING CENTER (SALC)

Student Name: _____ UCM ID#: _____

SCHOOL OF ENGINEERING
LOWER DIVISION REQUIREMENTS
FALL 2008 – SPRING 2009

Refer to eng.ucmerced.edu/soe for all updates as requirements are subject to change.

GENERAL EDUCATION REQUIREMENTS FOR ALL ENGINEERING STUDENTS:

NON-SCIENCE REQUIREMENTS:

- **CORE 1 (4 units)** _____
- **CORE 100 or equivalent(4 units)** _____
- **WRI 10 (4 units)** _____
- **GE Elective in the Humanities or Arts (4 units):** _____
- **GE Elective in the Social Sciences (4 units):** _____
- **Service Learning (ENGR 97 or 197) course *or* Humanities or Arts or Social Sciences course (3 units, can be lower or upper division):** _____
- **Upper division Service Learning (ENGR 197) *or* upper division Humanities or Arts or Social Sciences course (3 upper division units):** _____

MAJOR PREPARATORY REQUIREMENTS:

- **MATH 21 (4 units)** _____ **and PHYS 8 (4 units)** _____
- **Statistics: MATH 32 (4 units)** _____
- **Biology: BIO 1 (4 units)** _____
- **Computer Science: CSE 20 (2 units)** _____ **CSE 21 (2 units):** _____
- **General Chemistry: CHEM 2 (4 units)** _____
- **Physics: PHYS 9 (4 units)** _____
- **Mathematics: MATH 22 (4 units)** _____; **MATH 23 (4 units)** _____; **MATH 24 (4 units)** _____
- **FRESHMAN SEMINAR (CORE 90X) or SERVICE LEARNING (ENGR 97/197) (1unit):** _____
  - **One unit of Freshman Seminar (CORE 90X) or Service Learning (ENGR 97) must be taken during the freshman year. Service Learning (ENGR 97/197) can be counted for up to 6 GE units.**

ENGINEERING FUNDAMENTALS:

- **ENGINEERING FUNDAMENTAL REQUIREMENTS DIFFER BY MAJOR: The following are lower divison fundamentals (if you are considering an engineering major contact a School of Engineering advisor for best information on the ones to select):**
  - **ENGR 45 (4 units, prereq Math 21, Physics 8, Chem 2, Spring only) – required for: Bioengineering, Mechanical Engineering**
  - **ENGR 50 (2 units, Fall only, prereq Math 21 and Physics 8) – required for: ME and MSE, recommended for ENVE**
  - **ENGR 57 (2 units, Spring only, prereq ENGR 50) – required for: ME and MSE, recommended for ENVE**
  - **Additional upper division courses are listed in the General Catalog.**

REQUIREMENTS BY MAJOR

Note: Upper division requirements are NOT listed below see General Catalog or check with an advisor in Engineering.

BIOENGINEERING (BIOE)

ENG FUND - ENGR 45 (4 units) _____		
BIOE 30 (4 units) _____ CHEM 10 (4 units) _____ CHEM 8 (4 units)_____	Service Learning (6-10 units); up to 2 Freshman Sem (90X) units _____	Technical Electives option: BIOE 95 (1-5 units) _____

COMPUTER SCIENCE & ENGINEERING (CSE)

CSE 30 (4 units) _____	CSE 31 (4 units) _____	ENGINEERING FUNDAMENTALS: See list above.

ENVIRONMENTAL ENGINEERING (ENVE)

ENVE 20 (4 units) _____	CHEM 10 (4 units) _____	ENGINEERING FUNDAMENTALS: See list above.

MATERIALS SCIENCE & ENGINEERING (MSE)

ENGINEERING FUNDAMENTALS: ENGR 50 (2 units) _____; ENGR 57 (3 units) _____ ENGR 45 (4 units)_____

MECHANICAL ENGINEERING (ME)

ENG FUNDAMENTALS: ENGR 50 (2 units) _____; ENGR 57 (3 units) _____; ENGR 45 (4 units) _____ ADD'L ENG FUND COURSES: PLEASE SEE MECHANICAL ENG, PP IN THE 07-08 GENERAL CATALOG
Service Learning ENGR 97/197 required (6 units of either) _____

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SCHOOL OF NATURAL SCIENCES
LOWER DIVISION REQUIREMENTS

FALL 2008 – SPRING 2009

GENERAL EDUCATION REQUIREMENTS FOR ALL NATURAL SCIENCES STUDENTS:

NON-SCIENCE REQUIREMENTS:

- **CORE 1 (4 units)** _____
- **CORE 100 (4 units)** _____
- **WRI 10 (4 units)** _____
- **GE Elective outside NS and ENG (3-4 units):** _____
- **GE Elective outside NS and ENG (3-4 units):** _____
  - **GE Elective can not be group study or research.**
- **Two GE electives outside Natural Sciences and Engineering (4 units each):**
  - **One course must emphasize in written or oral communication; one course must be upper division.**

_____ _____

SCIENCE REQUIREMENTS:

- **MATH 21 (4 units)** _____
- **PHYSICS course (4 units) from: PHYS 8 or PHYS 18** _____
  - **PHYS 8 required for Applied Math Sci & Physics majors.**
- **STATISTICS course (4 units) from: MATH 18 or MATH 32** _____
  - **MATH 32 required for Applied Math Sci & Physics majors.**
  - **BIOLOGICAL SCIENCES majors can also choose from: ENVE 105 or PSY 10.**
  - **EARTH SYSTEMS SCIENCES majors can also choose from ENVE 105.**
- **CHEM 2 (4 units)** _____
- **COMPUTER SCIENCE course from: MATH 15 (2 units), CSE 5 (4 units), or CSE 20 (2 units):** _____
  - **CSE 20 required for Applied Math Sci & Physics majors.**

REQUIREMENTS BY MAJOR

Note: Upper division requirements are NOT listed below see General Catalog or check with an advisor in Natural Sciences.

ADDITIONAL NOTE: Prerequisites for health professional schools are not included. Please refer this website for specific course information: http://naturalsciences.ucmerced.edu/

BIOLOGICAL SCIENCES

Emphasis tracks available are Molecular & Cell Biology; Human Biology; Ecology and Evolutionary Biology; Developmental Biology; and Microbiology and Immunology.

BIO 1 (4 units) _____	CHEM 10 (4 units) _____	CHEM 8 (4 units) _____
One from: MATH 30 or MATH 22 (4 units) _____	One from: PHYS 9 or PHYS 19 (4 units) _____	

APPLIED MATHEMATICAL SCIENCES

Emphasis tracks available are Physics; Economics; Computational Biology; Computer Science and Engineering; or Engineering Mechanics.

MATH 22 (4 units) _____	MATH 23 (4 units) _____	MATH 24 (4 units) _____
PHYS 9 (4 units) _____	One from: BIO 1*, ESS 1, or ESS 5 (4 units) _____ *BIO 1 required for the Computational Biology Emphasis	
ADDITIONAL LOWER DIVISION REQUIREMENTS (SEE UPPER DIVISION REQTS IN GENERAL CATALOG): For Physics Emphasis: PHYS 10 (4 units) _____ For Economics Emphasis: ECON 1 (4 units) _____; ECON 11 (4 units) _____ For Computer Science & Engineering Emphasis: CSE 30 (4 units)_____; CSE 31 (4 units) _____ For Engineering Mechanics Emphasis: ENGR 57 (3 units) _____		

CHEMICAL SCIENCES

Emphasis tracks available are Chemistry; Materials Chemistry; Biological Chemistry; or Environmental Chemistry.

BIO 1 (4 units) _____	CHEM 10 (4 units) _____	CHEM 8 (4 units) _____
MATH 22 (4 units) _____	MATH 23 (4 units) _____	MATH 24 (4 units) _____
PHYS 9 (4 units) _____		
ADDITIONAL LOWER DIVISION REQUIREMENTS (SEE UPPER DIVISION REQTS IN GENERAL CATALOG): For ALL emphases: Option to use CHEM 95/195 (minimum 2-5 units) _____ For Materials Chemistry Emphasis: ENGR 45 (4 units) _____ For Environmental Chemistry Emphasis: One from – ESS 20, ESS 70, ENVE 20 (4 units) _____		

EARTH SYSTEMS SCIENCE

Emphasis tracks available are Atmospheric Sciences; Geochemistry and Biochemistry; Hydrologic and Climate Sciences; or Ecosystem Science.

MATH 22 (4 units) _____	CHEM 10 (4 units) _____	PHYS 9 or 19 (4 units) _____
One from: ESS 1, ESS 5, BIO 1 (4 units) _____	One from: ESS 20 or 70 (4 units) _____	Research units from: ESS 95/195 and/or ENGR 97/197 (1-6 units)
One from: ESS 25, CHEM 8, ENVE 20 (4 units) _____		

PHYSICS

Emphasis tracks available are Atomic, Molecular, and Optical (AMO) Physics; Mathematical Physics; Biophysics; Earth and Environmental Physics; Materials Physics; or Engineering Physics.

MATH 22 (4 units) _____	MATH 23 (4 units) _____	MATH 24 (4 units) _____
PHYS 9 (4 units) _____	PHYS 50 (4 units) _____	

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SCHOOL OF SOCIAL SCIENCES, HUMANITIES & ARTS (SSHA) LOWER DIVISION REQUIREMENTS

FALL 2008 - SPRING 2009

Refer to ssha.ucmerced.edu, "ADVISING", "GE COURSES" for all updates as requirements are subject to change.

GENERAL EDUCATION REQUIREMENTS FOR ALL SSHA STUDENTS:

CORE 1 (4 units) _____ **WRI 10 (4 units)** _____

- **Intro Natural Science/Engineering Course with Lab (Choose ONE, 4 units)** _____

  BIO 1: Contemporary Biology _____
  BIO 3: Molec Basis: Health & Dis _____
  BIO 5: Biology Today _____
  CHEM 2: General Chemistry _____
  ENVE 10: Environment in Crisis _____
  ESS 1: Intro to Earth Systems Science _____

- **Natural Science/Engineering Course without Lab (Choose ONE, 4 units)** _____

  BIO 10: Genetics, Stem Cells & Devt _____
  PHYS 5: Energy & the Environment _____
  PHYS 6: The Cosmos, Science and You _____
  ESS 50: Ecosystems of California _____
  BIO 60: Nutrition _____

- **Quantitative Analysis Course (Choose ONE, 4 units)** _____

  ECON 10: Analysis of Econ Data _____
  MATH 21: Calculus I _____
  PHIL 5: Logic & Crit Reasoning _____
  POLI 10: Statistical Inference _____
  PSY 10: Analysis of Psych Data _____

- **Humanities and Arts Course**
  OUTSIDE OF EMPHASIS (Choose ONE, 4 units) _____
  (see ssha.ucmerced.edu for an updated list)

ARTS 1 _____	ARTS 5 _____	GASP 13 _____	HIST 21 _____	LIT 30 _____	LIT 69 _____
ARTS 2B _____	ARTS 7 _____	GASP 21 _____	HIST 30 _____	LIT 31 _____	PHIL 1 _____
ARTS 2C _____	ARTS 10 _____	HIST 10 _____	HIST 31 _____	LIT 40 _____	LD FOREIGN LANG._____
ARTS 2D _____	ARTS 11 _____	HIST 11 _____	HIST 70 _____	LIT 41 _____	
ARTS 3 _____	GASP 2 _____	HIST 16 _____	HIST 71 _____	LIT 50 _____	
ARTS 4 _____	GASP 3 _____	HIST 17 _____	LIT 20 _____	LIT 51 _____	
ARTS 4A _____	GASP 5 _____	HIST 20 _____	LIT 21 _____	LIT 61 _____	

- **Intro Social & Cognitive Sciences Course**
  OUTSIDE OF EMPHASIS (Choose ONE, 4 units) _____
  (see ssha.ucmerced.edu for an updated list)

ANTH 1 _____	COGS 5 _____	POLI 5 _____	SOC 1 _____
ANTH 3 _____	ECON 1 _____	POLI 9 _____	SOC 2 _____
ANTH 5 _____	POLI 1 _____	PSY 1 _____	SOC 9 _____
COGS 1 _____	POLI 3 _____	PUBP 1 _____	SOC 30 _____

- **UPPER DIVISION GENERAL EDUCATION REQUIREMENT:**
  - **CORE 100 (4 units)** _____
  - **4 UPPER DIVISION COURSES OUTSIDE AREA OF EMPHASIS/MAJOR** _____
    (SEE SSHA.UCMERCED.EDU FOR APPROVED LIST)

REQUIREMENTS BY MAJOR

Note: Upper division requirements are NOT listed below! REQUIREMENTS ARE SUBJECT TO CHANGE!
Please refer to ssha.ucmerced.edu or a SSHA advisor.

ANTHROPOLOGY, B.A.

ANTH 1 (4 units) _____	ANTH 3 (4 units) _____	ANTH 5 (4 units) _____
One from: PSY 10, MATH 18, ECON 10, POLI 10 _____		

COGNITIVE SCIENCE, B.A. (all requirements in unshaded area ONLY)
COGNITIVE SCIENCE, B.S. (requirements in ALL areas, including shaded area)

COGS 1 (4 units) _____	MATH 21 (4 units) _____	MATH 22 or MATH 30 (4 units) _____
One from: COGS 5, ECON 1, PHIL 1 (4 units) _____	CSE 5 (4 units) or CSE 20 (2 units) _____ **CSE 5 not accepted for B.S.**	CSE 21 (2 units) _____
PSY 1 (4 units) _____	1 ADDTL SCI/ENG LAB COURSES in addition to Science GE requirement (4 units) from: BIO 1, BIO 3, BIO 5, CHEM 2, CHEM 8, ESS 1, ENVE 10, PHYS 8, PHYS 9 _____	
PSY 10 (4 units) _____		

ECONOMICS, B.A.

ECON 1 (4 units) _____	MATH 21 (4 units) _____	ECON 10 (4 units) _____
One from: COGS 1, PSY 1, POLI 1, SOC 1 (4 units) _____		

HISTORY, B.A.
(Choose concentration: World History *OR* U.S. History)

WORLD HISTORY CONCENTRATION (16 units): HIST 10 _____ & HIST 11 _____ Two lower division History electives outside area of concentration: _____ _____	***U.S. HISTORY CONCENTRATION*** (16 units): HIST 16 _____ & HIST 17 _____ Two lower division History electives outside area of concentration: _____ _____
BOTH CONCENTRATIONS ABOVE: • FOREIGN LANGUAGE: 2 sem. of college-level courses in language other than English (8 units total or equivalent): _____ _____ • BREADTH REQUIREMENT: 2 non-History lower/upper division courses within concentration – see SSHA website or consult an advisor (8 units total): _____ _____	

LITERATURE & CULTURES, B.A.
(Choose concentration: Lit of English-Speaking World *OR* Lit of Spanish-Speaking World)

ENGLISH-SPEAKING WORLD CONCENTRATION • TWO from (preferably a sequence, 8 units): LIT 30, 31, 40, 41 _____ _____ • TWO LOWER DIVISION LIT ELECTIVES (8 units): _____ _____ • FOREIGN LANGUAGE: 2 semesters of college-level foreign language or equivalent: _____ _____	***SPANISH-SPEAKING WORLD CONCENTRATION*** • LIT 50 _____ LIT 51 _____ • TWO LOWER DIVISION LIT ELECTIVES (8 units): _____ _____ • FOREIGN LANGUAGE: 4 semesters of college-level Spanish or equivalent: _____ _____ _____ _____
BOTH CONCENTRATIONS ABOVE, BREADTH REQUIREMENT: Two non-Literature lower/upper div. courses within concentration – see SSHA website or consult an advisor (8 units total): _____ _____	

MANAGEMENT, B.S.

MGMT 25 (4 units) _____	ECON 1 (4 units) _____	MATH 21 (4 units) _____
MGMT 26 (4 units) _____	ECON 10 (4 units) _____	CSE 5 (4 units) _____

POLITICAL SCIENCE, B.A.

POLI 1 (4 units) _____	Two from: POLI 2, 3, 5, 6, or 9_____ _____	POLI 10 (4 units) _____

PSYCHOLOGY, B.A.

PSY 1 (4 units) _____	PSY 10 (4 units) _____	PSY 15 (4 units) _____
One from: ANTH 1, COGS 1, ECON 1, POLI 1, PUBP 1 or SOC 1 _____		