The BA in Liberal Arts and Engineering Studies provides an educational vehicle for the person who does not want a career in engineering, but seeks a career in which a background in the liberal arts and engineering will further interaction with those with design knowledge and in technological settings or to translate technological information to those with less technological knowledge. This degree will not produce more practicing engineers, but it will produce more technologically literate students who understand the principles of engineering and who will apply them to the profession they choose to pursue as citizens of a deeply technological society.

Modern society is technologically driven and technology centered. Thus, an understanding of technology, a technological literacy, is a critical prerequisite for full participation as a citizen in the 21st Century world. Indeed, government rarely characterizes the key public challenges as questions of technology, they are assumed to be socioeconomic-political problems, areas of study traditionally allied with the liberal arts. In addition, the intersection of technology with the humanities and the performing and fine arts reframes age-old questions about aesthetics, audience, and affective impact.

In its connection to human affairs, technology now defines our culture in much the same way religion or philosophy has in times past. It profoundly changes lifestyles, and can reinforce or collide with our most strongly held values. It modulates the most celebrated passages of our human existence with artificial interventions during birth and on the deathbed. Unseen and often unnoticed, technology plays a significant role in our futures. The program offers a four-year curriculum leading to a BA degree, which prepares students for careers interfacing with engineering, at the cusp of new interdisciplinary activities or for further education in graduate school.

This curriculum allows the BA in liberal arts and engineering studies graduate, in partnership with members of other colleges at the university, to participate in the interdisciplinary teams required for realization of continuous innovation.

The goal of the proposed program is to provide its graduates with a solid engineering and scientific appreciation that will underpin them in careers other than engineering. To support these goals, the overarching learning objectives for students participating in the program:

- Have a working knowledge of mathematics, science, and basic engineering.
- Have a working knowledge of the essential philosophical, ethical, aesthetic and expressive aspects of our culture and their historical development.
- Have the ability to communicate effectively through a variety of media in diverse, multicultural contexts.
- Have the ability to understand a technical system, component or process.
- Can function effectively as a member of an interdisciplinary and international team.
- Have the ability to identify technical problems and use a multidisciplinary perspective to help formulate effective solutions.
- Have a solid understanding of the ethical and professional responsibilities associated with the creation, use and integration of new and existing technology.
- Have an understanding of the social, political and historical impact of technical solutions to complex modern problems.
- Have the ability to continue asking questions and seeking interdisciplinary solutions to technological dilemmas.
- Understand their responsibilities as informed citizens in a technological society and therefore remain engaged in helping that society improve.
MAJOR COURSES

CHEM 124 Gen Chem for Engineering (B3/B4)*... 4
ENGL 149 Technical Writing for Engineers (A3)* 4
LAES 301 Project-Based Learning in LAES........ 4
LAES 411 Collaborative Global Partnerships in LAES................................. 4
LAES 461 Senior Project (or other approved senior project course)........................ 4
LAES 462 Capstone Senior Seminar in LAES ... 4
MATH 141, 142 Calculus I, II (B1)*.................. 4,4
MATH 143 Calculus III (B5)*........................ 4
MATH 241 Calculus IV........................................ 4
MATH 244 Linear Analysis I or advisor approved elective........................................... 4
PHYS 141 General Physics IA.......................... 4
PHYS 132, 133 General Physics II, III............. 4,4
Engineering concentration (minimum 8 units at 300-400 level)... 34-35
Liberal Arts concentration (minimum 12 units at 300-400 level)... 24
STAT 312/321/350............................................. 4
Study Abroad or Global Perspectives courses (300-400 level)......................... 4,4

TOTAL 126-127

GENERAL EDUCATION (GE)

72 units required; 20-32 units in Major, depending on concentration.
→See page 56 for complete GE course listing.
→Minimum of 12 units required at the 300-400 level.

Area A Communication (8 units)

A1 Expository Writing ........................................ 4
A2 Oral Communication ..................................... 4
A3 Reasoning, Argumentation, and Writing * 4 units in Major ................................. 0

Area B Science and Mathematics (4 units)

B1 Mathematics/Statistics * 8 units in Major .... 0
B2 Life Science .................................................. 4
B3 Physical Science * 4 units in Major............... 0
B4 One lab taken with either a B2 or B3 course B5 (requirement for Liberal Arts students only) * 4 units in Major ................................. 0

Area C Arts and Humanities (16 units)

C1 Literature ..................................................... 4
C2 Philosophy ................................................... 4
C3 Fine/Performing Arts * in concentration ...... 0-4
C4 Upper-division elective * in concentration..... 0-4

Area D/E Society and the Individual (20 units)

D1 The American Experience (40404) .............. 4
D2 Political Economy ......................................... 4
D3 Comparative Social Institutions .................. 4

D4 Self Development (CSU Area E) ................. 4
D5 Upper-division elective .............................. 4
Area F Technology Elective (upper division) * in conc 0-4

40-52

ELECTIVES.......................................................... 14-1

180

ENGINEERING CONCENTRATIONS (select one)

Computer Graphics Concentration

CSC 100 Computer Science Orientation........ 2
CSC 101 Fundamentals of Computer Science I ... 4
CSC 102 Fundamentals of Computer Science II... 4
CSC 103 Fundamentals of Computer Science III.. 4
CSC 141 Discrete Structures I......................... 4
CPE 129, 169 Digital Design and Lab........... 3,1
CPE 229, 269 Computer Des Assembly & Lab..... 3,1
CSC 357 Systems Programming.................... 4
CSC 471 Intro to Computer Graphics.............. 4

34

Electrical Engineering (Power) Concentration

EE 111, 151 Intro to Electrical Engineering, Lab 1,1
EE 112 Electric Circuit Analysis I................. 2
EE 211, 241 Electric Circuit Analysis II, Lab..... 3,1
EE 212, 242 Electric Circuit Analysis III, Lab.... 3,1
EE 255, 295 Energy Conver Electromag, Lab..... 3,1
EE 335, 375 Electromagnetics, Lab................. 4,1
EE 406 Power Systems Analysis I................ 4
EE 407, 444 Power Systems Analysis II, Lab..... 4,1
Advisor approved power technical elective..... 4

34

System Design Concentration

IME 101 Intro Industrial & Manuf Engr.......... 1
IME 223 Work Design and Measurement........ 4
IME 239 Industrial Costs & Controls............ 3
IME 301 Operations Research I................... 4
IME 303 Project Organization & Management... 4
IME 314 Engineering Economics................ 3
IME 320 Human Factors & Tech (Area F)*........ 4
IME 326 Engineering Test Design & Analysis.... 4
IME 420 Simulation .......................................... 4
IME 443 Facilities Planning and Design........ 4

35

Individualized Course of Study – Engineering.... 34

Courses to be selected with program advisor. A minimum of 8 units must be at the 300-400 level.
LIBERAL ARTS CONCENTRATIONS (select one)

**Culture, Society and Technology Concentration**
- ES/WS 350 Gender, Race, Science & Technology (Area F)* (USCP) ........................................ 4
- HUM 303/PHIL 341/PHIL 337 (C4)* .................. 4
- POLS 451 Technology & Public Policy ............... 4

*Advisor approved electives. Select 12 units from:
- ANT 360, COMS 317, GEOG 318,
- GEOG 333, HIST 354, HIST 359,
- JOUR 331, JOUR 470, PHIL 322,
- PHIL 340, POLS 347, PSY 311, PSY 494 .......... 12

24

**Interactive Communication – Cinema**

Concentration
- TH 210 Introduction to Theatre (C3)* ............... 4
- ENGL 371 Film Styles and Genres (C4)* ............ 4
- ENGL 411 New Media Arts I ............................. 4

*Advisor approved electives. Select 12 units from:
- ENGL 210, ENGL 370, ENGL 372, ENGL 412,
- ENGL 416, ENGL 419, COMS 311, COMS 385,
- COMS 419 .................................................. 12

24

**Interactive Communication – Theatre**

Concentration
- TH 210 Introduction to Theatre (C3)* ............... 4
- TH 227/228 Theater History ............................. 4
- ENGL 411 New Media Arts I ............................. 4

*Advisor approved electives. Select 12 units from:
- ENGL 210, ENGL 412, TH 220,
- TH 230/330, TH 310/320/360/390,
- TH 430, TH 434, HUM 320 ............................. 12

24

**Technical Communication Concentration**

- ENGL 317 Technical Editing ............................ 4
- ENGL 319 Information Design & Production ........ 4
- COMS 317 Technology & Human Comm .............. 4

*Advisor approved electives. Select 12 units from:
- ENGL 210, ENGL 310, ENGL 418/420, HUM
- 303, PHIL 337/341, COMS 213, COMS 301 ...... 12

24

**Publishing Technology Concentration**

- GRC 101 Intro to Graphic Communication .......... 3
- GRC 201 Electronic Publishing Systems .............. 3
- GRC 211 Substrates, Inks and Toners ............... 4
- HUM 303/PHIL 341/PHIL 337 (C4)* ................. 4

*Advisor approved electives. Select 10 units from:
- COMS 317, GRC 316, GRC 328, GRC 329,
- GRC 402, PSY 494 ...................................... 10

24

**Individualized Course of Study – Liberal Arts**

Courses or a minor to be selected from College of Liberal Arts with program advisor approval. A minimum of 12 units must be at the 300-400 level.