

ARCHITECTURAL DESIGN

The Architectural Design major seeks to integrate engineering and architecture in ways that blend innovative architectural design with cutting-edge engineering technologies. Combining hands-on architectural design studios with a wide variety of courses, students can choose from a broad mix of elective courses in energy conservation, sustainability, building systems, structures, as well as design foundation and fine arts courses.

In addition to preparing students for advanced studies in architecture and construction management, the program's strong math and science requirements prepare students well for graduate work in other fields, such as civil and environmental engineering, law, and business. The major provides a background for individuals wanting to explore a diversity of careers in architecture, engineering, construction, and structures.

This undergraduate major grants a degree of Bachelor of Science in Engineering with a specialization in Architectural Design. This engineering major is not an ABET-accredited engineering degree, nor is it designed to lead directly to professional licensure in architecture. In order to become a professional architect or engineer, additional graduate training is required.

The program's courses also benefit civil engineering majors who want to develop a "concentration" in architecture. In addition, for students majoring in related fields such as Urban Studies, Product Design, and Studio Arts, the course offerings in architecture and engineering can be used to fulfill the requirements for a minor in the Department of Civil and Environmental Engineering.

REQUIREMENTS

A total of 100 units are required, distributed as follows.

Mathematics and Science (36 units minimum), *Including*

Math 19, 20, 21 (or 41 & 42)

One course in Statistics required (see Chapter 3, Fig. 3-1 for list of approved courses)

Physics 21 or 41 (Mechanics) is required.

For other courses, choose from the School of Engineering approved list of math and science courses (listed in this handbook [Fig. 3-1] and online at <http://ughb.stanford.edu>), and the following lists of additional approved *or* recommended courses for the major.

Specially approved science courses for the AD Major

- Earth Systems 101 (Energy and the Environment).
- Earth Systems 102 (Renewable Energy Sources and Greener Energy Processes).

Recommended math and science courses for the AD Major

- CEE 101D (Mathematical Laboratory Applications in CEE Engineering).
- CME 100 (Introduction to Engineering Mathematics).
- CEE 64 (Air Pollution: Urban Smog to Global Change).
- CEE 70 (Environmental Science and Technology).
- Geology & Env Sciences 1 (Dynamic Earth: Fundamentals of Earth Science).
- Physics 23 or 43 (Electricity).

Technology in Society

One course required. Choose from the approved list of courses in this handbook (Figure 3-3).

Engineering Fundamentals and Depth

60 units minimum required from Engineering Fundamentals; Required Depth Classes; and Required Depth Electives

ENGINEERING FUNDAMENTALS: THREE COURSES REQUIRED

Course	Title	Units
ENGR 14	Applied Mechanics: Statics (req'd)	3
ENGR 60	Engineering Economy (req'd)	3
	Fundamentals Elective	3-5

REQUIRED DEPTH COURSES

Course	Title	Units
CEE 100	Managing Sustainable Building Projects <i>*fulfills writing in major*</i>	4
CEE 101A	Mechanics of Materials	4
CEE 110	Building Information Modeling	4
CEE 31 <i>or</i> 31Q	Accessing Architecture Through Drawing	4
CEE 130	Architectural Design: 3-D Modeling, Methodology, and Process	4
CEE 137B <i>or</i> other in 137 series	Intermediate Architecture Studio	5
CEE 136	Green Architecture (not offered 08-09)	4
CEE 156	Building Systems	4
Art History 3	Introduction to The History of Architecture	5

DEPTH ELECTIVES

- *At least one of the following courses: CEE 111: Multidisciplinary Modeling (Computer focus 3-4 units); CEE 115: Goals & Methods for Sustainable Design (Sustainability focus 3-4 units), CEE 138A: Contemporary Architecture: Materials, Structures, and Innovations (Arch Discourse focus 3 units); or CEE 131A: Introduction to Design Professions (Arch Practice focus 2 units).*
- The number of units of Depth Electives must be such that courses in Engineering Fundamentals, Required Depth and Depth Electives total at least 60 units. Choose additional electives from following *with at least 3 units from courses within the School of Engineering.*

Course	Title	Units
CEE 80N	The Art of Structural Engineering (not offered 08-09)	4
CEE 101B	Mechanics of Fluids	4
CEE 101C	Geotechnical Engineering	3-4
CEE 111	Multidisciplinary Modeling and Analyses	3-4
CEE 115	Goals and Methods for Sustainable Design of Buildings	3-4
CEE 122A,B	Computer Integrated Architecture/Engr./Construction	3,2
CEE 131A	Introduction to the Design Professions	2
CEE 134B	Architectural Studio: Special Topic	4
CEE 135A	Parametrics: Applications in Architecture and Product Design	4
CEE 137B (or CEE 137A)	Intermediate Architecture Studio Form and Structure (not given 2008-09)	5
CEE 138A	Contemporary Architecture: Materials, Structures, and Innovations	3
CEE 139	Design Portfolio Methods	2
CEE 154	Cases in Estimating Costs	3
CEE 172A	Indoor Air Quality	2-3
CEE 176A	Energy Efficient Buildings	3-4
CEE 180	Structural Analysis	4
CEE 181	Design of Steel Structures	4
CEE 182	Design Experience – Steel Structures	4
CEE 183	Integrated Building Design	4
ENGR 50	Introductory Science of Materials	4
ME 101	Visual Thinking	3
ME 110A	Design Sketching	1
ME 115	Human Values in Design	3
ME 120	History and Philosophy of Design	3-4
ME 222	Beyond Green Theory: Workshop in Ecological Design	2-3
ARTSTUDI 60	Design I: Fundamental Visual Language	3-5
ARTSTUDI70	Introduction to Photography	4
ARTSTUDI140	Drawing I	3
ARTSTUDI145	Painting I	3
ARTSTUDI148	Printmaking	3
ARTSTUDI271	The View Camera: Its Uses and Techniques	3
ARTHIST 142	Varieties of Modern Architecture	4
FILMPROD 114	Introduction to Film and Video Production	5
DRAMA 137	Drafting and Construction	2-3

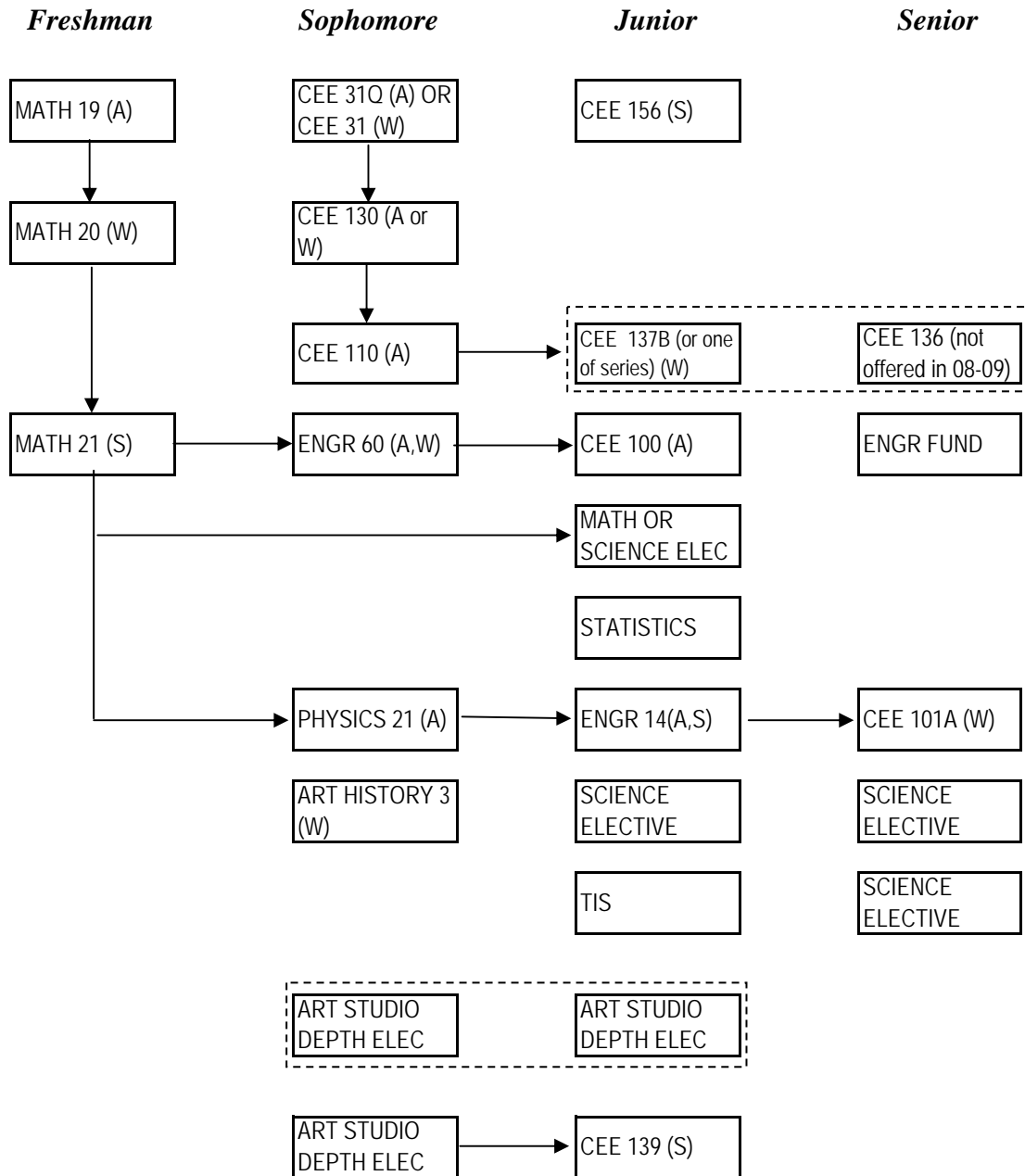
SUGGESTED COURSE CONCENTRATIONS AND SEQUENCES

Subject to the requirements outlined above, students have considerable leeway in choosing their depth electives and other courses to best suit their background and interests. By careful selection of technically-oriented depth electives, students can complement their studio experience with courses in structural analysis, construction, cost estimating, and energy efficiency.

Students intent on applying to architecture graduate school are encouraged to take studio art courses as early as possible in their academic career and to take more than the required number of architecture studios. In preparation for architecture graduate school applications, students should plan on taking the portfolio preparation class (CEE 139). It is also recommended that students take computer modeling courses which will enable them to pursue summer internships. Internships are valuable since they allow students to test their interest in architecture as a profession.

Architectural Design

Typical Sequence of Courses



*Arrows represent direct prerequisites

*Dashed-line boxes enclose alternates. These may indicate alternated years in which to take a given course, or alternate courses that may be taken at a given time.

Plus other courses to include:

* Third Engineering Fundamentals course

*The number of departmental electives must be such that courses in Eng Fund, Required Depth, and Depth Electives total at least 60 units

Architectural Design

Typical 4-Year Plan

	<i>Fall</i>				<i>Winter</i>				<i>Spring</i>			
	Math/				Math/S				Math/S			
	Sci	Engr	Other	Class	ci	Engr	Other	Class	ci	Engr	Other	
<i>Freshman</i>	MATH 19	3			MATH 20	3			MATH 21	4		
	IHUM			5	IHUM		5	IHUM			5	
	Writing			3	Writing		3	GER			5	
	GER			4	GER		4					
	<i>Subtotals</i>	<i>3</i>	<i>0</i>	<i>12</i>	<i>Subtotals</i>	<i>3</i>	<i>0</i>	<i>12</i>	<i>Subtotals</i>	<i>4</i>	<i>0</i>	<i>10</i>
Total	15			Total	15			Total	14			
<i>Sophomore</i>	Language			5	Language		5	Language			5	
	Physics 21	4			ENGR 60	3		CEE 100*		4		
	CEE 31 or 31Q		4		CEE130	4		Depth Elctv (Art Studic		3		
	CEE 110		4		ARTHIS3	5		Unrstr Elctv			3	
	<i>Subtotals</i>	<i>4</i>	<i>8</i>	<i>5</i>	<i>Subtotals</i>	<i>0</i>	<i>12</i>	<i>5</i>	<i>Subtotals</i>	<i>0</i>	<i>7</i>	<i>8</i>
Total	17			Total	17			Total	15			
<i>Junior</i>	TIS			4	STAT 60	5			ENGR 14		3	
	GER			4	Depth Elctv		3		CEE 156		4	
	Math or Sci Elctv	5			Unrstr Elctv			4	Science Elctv	5		
	Unrstr Elctv			3					Depth Elctv		3	
	<i>Subtotals</i>	<i>5</i>	<i>0</i>	<i>11</i>	<i>Subtotals</i>	<i>5</i>	<i>3</i>	<i>4</i>	<i>Subtotals</i>	<i>5</i>	<i>10</i>	<i>0</i>
Total	16			Total	12			Total	15			
<i>Senior</i>	Science Elctv	3			CEE 101A		4		Science Elctv	4		
	Unrstr Elctv			4	CEE 136 (not 08-09)				Depth Elctv		4	
	GER			5	Funds Elctv		3		Unrstr Elctv		3	
					Unrstr Elctv			5	Elctv Studio		4	
	<i>Subtotals</i>	<i>3</i>	<i>0</i>	<i>9</i>	<i>Subtotals</i>	<i>0</i>	<i>12</i>	<i>5</i>	<i>Subtotals</i>	<i>4</i>	<i>8</i>	<i>3</i>
Total	12			Total	17			Total	15			

Total Math & Science Units:	36
Total Engineering Units:	60
Total Other Units:	84
Total Units:	180

Notes:

- * CE100 fulfills the WIM (writing in the major) requirement.
- + At least 3 units of Depth Electives must be taken from departments within the School of Engineering.

INSTRUCTIONS FOR DECLARING MAJOR IN ENGINEERING: ARCHITECTURAL DESIGN (BS-ENGR)

1. Print your unofficial Stanford transcript from Axess and download the Architectural Design (AD) program sheet from the Undergraduate Handbook site ughb@stanford.edu.
2. Complete the AD program sheet, indicating how you plan to fulfill the major requirements and which electives you plan to take. Fill in every course you intend to take as well as courses you have already taken for your major. Please include full titles of the classes. Refer to the UGHB for approved math, science, Engineering Fundamental, and TIS courses (pages 19-26) Complete as much of the program sheet as possible on your own.
3. Make an appointment with Program Director John Barton (Y2E2 Bldg., Room 267), bringing your SU transcript and program sheet to the meeting. Review your program sheet and clarify questions regarding your academic plan.
4. AD advisor John Barton will sign your program sheet and have the AD program administrator, Christina Haines, deliver it to Student Services in CEE.
5. Christina Haines will email you when you can go on Axess and declare online.
6. Locate your freshman advising folder and deliver to Sandra Wetzels, CEE Student Services, Bldg Y2E2, Room 316.
7. If your program sheet changes as you progress in the program, you should submit revisions in consultation with your advisor. Note that any deviations from the approved program need to be petitioned; see below. Submit a final program sheet at least two quarters before you graduate. Your folder will be on file with Student Services in CEE

Other information:

- Procedures for requesting transfer credits and program deviations are described in detail in Chapter 4 - "Policies and Procedures." The relevant forms are in the back of the Handbook in the "Forms" section, or on the UGHB site under the "Petitions" link. The online forms may be filled out electronically. If you are requesting transfer credits or program deviations for the Depth portion of your program, you should bring a copy of your completed petition form and your unofficial transcript to the CEE Student Services office; obtain your program sheet from your file and attach to your other forms for processing.
- Check with the CEE Student Services Office to make sure that you are signed up on the CEE undergraduate students e-mail list server for important announcements about CEE Department events and activities.

Note: The online version of the UGHB is considered the definitive and final version of SoE requirements for each major. Since corrections or updates may have been made after this Handbook went to press in August 2008, download the online AD program sheet from ughb.stanford.edu to ensure you are using an accurate major plan.

Architectural Design Program Sheet (continued)

Engineering Fundamentals (3 courses required)

ENGR	14	Applied Mechanics: Statics (req'd)				3
ENGR	60	Engineering Economy (req'd)				3
		<i>Fundamentals Elective</i>				
<i>Engineering Fundamentals Total (3 courses required)</i>						

Required Depth (38 units minimum)

Dept	Course	Title	Transfer/AP Approval			Units	Grade
			✓ if Transfer	Initials	Date		
CEE	100	Managing Sustainable Building Projects (WIM; see note 3)				4	
CEE	101A	Mechanics of Materials				4	
CEE	110	Building Information Modeling				4	
CEE	31(Q)	Accessing Architecture Through Drawing				4	
CEE	130	Architectural Design				4	
CEE	137B*	Intermediate Architecture Studio				5	
CEE	136	Green Architecture (Not offered AY 08-09)				4	
CEE	156	Building Systems				4	
ARTHIST	3	Introduction to Architecture History				5	
<i>Required Depth Total (38 units required)</i>							

*or one of the 137 series

Depth Elective (See Note 4. Elective units must be such that courses in Eng Fundamentals, Required Depth, and Depth Electives total at least 60 units.)

Dept	Course	Title	Transfer/AP Approval			Units	Grade
			✓ if Transfer	Initials	Date		
<i>Depth Total</i>							

Program Totals

<i>Mathematics and Science (36 units minimum)</i>	
<i>Technology in Society Units (1 course required)</i>	
<i>Engineering Fundamentals Units (3 courses required)</i>	
<i>Required Depth Units (38 units minimum)</i>	
<i>Depth Electives (no. of required units to bring total to 100)</i>	
<i>TOTAL (100 units minimum)</i>	

NOTES continued

- (3) Fulfills the "Writing in the Major" requirement.
- (4) At least one of the following courses must be taken as a Depth elective: CEE 111, 115, 131A, or 138A.

Program Approvals

Advisor

Printed Name: _____ Date: _____
 Signature: _____

Departmental

Printed Name: _____ Date: _____
 Signature: _____

School of Engineering (signature not required prior to graduation)

Printed Name: _____ Date: _____
 Signature: _____