

Basic Education for a Structural Engineer

Course Content

Analysis 1			
Topics	<ol style="list-style-type: none"> 1. Introduction to Structures. 2. Forces. 3. Moments/couples. 4. Equilibrium and stability. 5. Concept of stress. 	<ol style="list-style-type: none"> 6. Concept of strain. 7. Stress-strain relationships. 8. Plane trusses – method of section and method of joints. 9. Frames. 10. Shear and bending moment diagrams – focus on the relationship between load, shear, moment and deflection. 	
Objectives	<ol style="list-style-type: none"> 1. Identify stable structures. 2. Develop and use free-body diagrams. 3. Evaluate the internal actions (shear, bending, and axial) in commonly used planar structural systems (trusses, frames, and beams). 4. Draw shear and bending moment diagrams. 		
Analysis 2			
Topics	<ol style="list-style-type: none"> 1. Introduction and review of statics. 2. Axially loaded members including indeterminate problems. 3. Bending of beams. 4. Shear and bending in beams. 5. Torsion including indeterminate problems. 6. Compressive members/instability. 7. Formulate and apply stress transformations and related extensions to principal stresses and maximum in-plane shear stress. 8. Compute shear flow and location of shear center for any thin-walled cross-section. 9. Understand the derivation and application of flexural deformation using basic principles: <ol style="list-style-type: none"> a. Slope and displacement of a beam by integration. b. Slope and displacement of a beam by moment-area. c. Indeterminate beam reactions using moment-area. 	<ol style="list-style-type: none"> 10. Formulation and application of the Euler buckling formula. 11. Stress transformation, Mohr's circle. 12. Beam deformations: double integration, moment-area, and indeterminate beam analysis. 13. Stability, morphology, and analysis of statistically determinate two- and three- dimensional structural systems. 14. Analysis of articulated beams and frames. 15. Slope-deflection method. 16. Moment distribution for beams and frames. 17. Virtual work – trusses, beams, and frames. 18. Approximate Methods. 19. Influence lines. 	
Objectives	<ol style="list-style-type: none"> 1. Compute deformations (axial, shear, and bending) in statically determinate structures using Virtual Work. 2. Compute member actions in statically indeterminate structures using Virtual, Work, Slope-Deflection, and Moment Distribution. 3. Distinguish between different methods and judge when it is appropriate to use each of the methods. 4. Approximate actions in statically determinate and indeterminate structures and judge when it is appropriate to use approximate methods. Use approximate methods to verify computer analysis results. 5. Draw influence lines for statically determinate and indeterminate structures and use these influence lines to specify critical loading combinations. 6. Determine internal stress distributions at discrete points in the beam. 7. Apply relationships between stress and strain under individual and combined loading and determine deformations due to tension. 8. Calculate moments of inertia of regular and irregular shapes. 9. Evaluate determinacy (including degrees of indeterminacy) and stability. 10. Draw deformed shapes for beams and frames. 		
Matrix Methods			
Topics	<ol style="list-style-type: none"> 1. Review of matrix algebra. 2. Basic concepts: Flexibility vs. stiffness 3. Flexibility method. 4. Stiffness method: Trusses. 	<ol style="list-style-type: none"> 5. Stiffness Method: Beams & Frames. 6. Stiffness Method: Three Dimensions. 7. Stiffness Method: Special Topics. 8. Introduction to Finite Element Analysis and Nonlinear Analysis. 	
Objectives	<ol style="list-style-type: none"> 1. Understand the theoretical basis of matrix methods. 2. Model and analyze real-world structures appropriately. 3. Understand advanced analysis methods such as finite element analysis and nonlinear analysis. 		

Basic Education for a Structural Engineer

Course Content



Steel Design 1

Topics	1. Historical development of steel as a building material. 2. Loading of steel building structures. 3. Properties of structural steel.	4. Design stresses and factors of safety. 5. Design of laterally braced and unbraced beams. 6. Design of beam-columns, use of AISC interaction equations.
Objectives	1. Understand the use of steel as a building material. 2. Understand the properties of steel including the manufacturing processes and types. 3. Analyze and design tension members, beams, and compression elements. 4. Understand the application of AISC – Manual of Steel Construction. 5. Recognize, analyze and design combined stress elements.	

Steel Design 2

Topics	1. Structural design computations for beams, girders, columns and beam-columns. 2. Design of connections (bolted & welded). 3. Structural working drawings (plan, elevation and connection details). 4. Overview of failure mechanisms and design procedures for plate girders.	5. AISC requirements for prevention of various failure mechanisms. 6. Design of flanges, web, stiffeners and welds. 7. Philosophy of energy absorption in a shear mechanism. 8. Requirements for the design of a link, the adjacent beam and the diagonal bracing of an Eccentric Braced Frame.
Objectives	1. Develop framing schemes for steel structures. 2. Design moment and braced frame systems. 3. Detail structural steel. 4. Design composite sections. 5. Design plate girders design (buckling shear)	

Concrete 1

Topics	1. Materials. 2. Flexural behavior and design. 3. Deflections.	4. Shear. 5. Development of reinforcement. 6. Columns.
Objectives	1. Understand material properties of reinforced concrete. Understand concrete member strain and stress states. 2. Analyze and design reinforced concrete beams subject to bending, shear, and axial load, including combined stresses. 3. Analyze and design reinforced concrete columns for bending, shear and axial load including combined stresses. 4. Detail reinforcement to develop required strengths. 5. Understand the application of ACI-318.	

Concrete 2

Topics	1. Introduction, general design principle, material and anchorages. 2. Loss of prestress. 3. Analysis of flexural sections. 4. Design of flexural sections. 5. Design of composite sections	6. Design of shear. 7. Prestress transfer bond, anchorage zone. 8. Cable profile, deflection. 9. Partial prestressed and non-prestressed reinforcement. 10. Design of continuous beams. 11. Post-tensioning two-way slabs.
Objectives	1. Understanding of the reasons and process for selecting prestressed and precast concrete for building systems/elements/architectural use. 2. Understand prestressing and precast materials and manufacturing processes. 3. Understand structural systems using prestressed and precast concrete members and the importance of connections. 4. Design of basic structural members using both pre- and post-tensioning. 5. Design of connections.	

Technical Writing

Topics	1. Review of basic grammar. 2. Report structure.	3. Report execution. 4. Communicating with lay people.
Objective	1. Craft a technical report/paper, well written and prepared for the target audience.	

Basic Education for a Structural Engineer

Course Content (continued)

Timber			
Topics	1. Properties of wood and lumber/Grades. 2. Design of members to resist bending. 3. Design of members to resist axial forces.	4. Design of shear walls and diaphragms. 5. Configuration of timber buildings. 6. Design of connections.	
Objectives	1. Understand the material characteristics of timber. 2. Design timber beams and columns for axial, shear, bending, and combined stresses. 3. Design plywood shear walls and horizontal diaphragms. 4. Understand the capacity of connectors (nail and bolts) used in timber construction. 5. Understand timber properties that affect its structural performance. 6. Develop conceptual designs for timber structural systems that are stable under vertical and lateral loads. 7. Describe the load flow through timber structural systems for vertical and lateral loads.		
Dynamic Behavior (including Seismic)			
Topics	1. Kinematics of a particle. 2. Kinetics of a particle: Force and acceleration. 3. Kinetics of a particle: Work and Energy. 4. Kinetics of a particle: Impulse and momentum. 5. Planar kinematics of a rigid body. 6. Planar kinetics of a rigid body: Force and acceleration. 7. Planar kinetics of a rigid body: Work and energy. 8. Planar kinetics of a rigid body: Impulse and Momentum. 9. Characteristics of earthquakes; causes, faults, seismic waves, plate-tectonics, magnitude and intensity; strong ground motion etc.	10. Response of single-D.O.F. structural systems to earthquake ground motion; concept of response spectra; design spectra; damping, damping ratios. 11. Response of multi-D.O.F. structural systems subjected to earthquake ground motion; mode shapes and frequencies; earthquake response analysis by mode superposition. 12. Inelastic seismic behavior and design of structural systems; concept of ductility. 13. Behavior of building structures under earthquake loading including reinforced concrete, prestressed concrete, steel, masonry and timber structures.	
Objectives	1. Develop a dynamic mathematical model for a rigid body. 2. Write the equation of motion for a rigid body. 3. Determine the response of a rigid body. 4. Apply building code principles to seismic analysis both empirical (static analysis) and modal. 5. Understand response of buildings, influence of soil, principles of damping. 6. Understand lateral forces on parts of buildings and contents.		
Foundation Design/Soil Mechanics			
Topics	1. Description and properties of foundation bearing materials. 2. Field exploration. 3. Lateral earth pressure. 4. Slope stability.	5. Shallow foundation (footings, rafts, mats). 6. Pile foundations. 7. Caisson foundations. 8. Retaining walls.	
Objectives	1. Understand material properties of soils and ledge. 2. Understand the relationship between insitu foundation bearing materials and allowable foundation and lateral pressure values presented in NFPA/IBC codes. 3. Be able to determine the empirical strength for insitu bearing material, and design an appropriate deep or shallow foundation. 4. Understand the effect of seismic forces and liquefaction on foundations.		
Masonry			
Topics	1. Introduction: types of masonry, masonry construction, properties of masonry, grout, mortar, and reinforcement. 2. Design and Analysis of Beams and Lintels.	3. Design and Analysis of Columns and Pilasters. 4. Design and Analysis of Reinforced Masonry Walls: bearing walls and shear walls	
Objectives	1. Identify the unique characteristics and behavior of masonry. 2. Analyze and design columns/pilasters, beams/lintels, bearing walls, and shear walls.		

The 2006 Education Survey Results Summary

The following list of schools offer the full curriculum:

Analysis	Concrete	Masonry
Matrix Methods	Timber	Foundation / Soils
Steel	Dynamic Behavior	Technical Writing
Auburn University www.auburn.edu	North Carolina State University www.ncsu.edu	University of Cincinnati www.uc.edu
California Polytechnic University San Luis Obispo www.calpoly.edu	Oklahoma State University Architectural Engineering architecture.ceat.okstate.edu	University of Florida www.ufl.edu
California State Polytechnic Pomona www.csupomona.edu	Oklahoma State University Civil Engineering cive.okstate.edu	University of Idaho Moscow www.uihome.uidaho.edu
California State University Los Angeles www.calstatela.edu	Oregon State University www.oregonstate.edu	University of Illinois Urbana www.uiuc.edu
Clemson University www.clemson.edu	Pennsylvania State University www.psu.edu	University of Kansas www.ku.edu
Georgia Institute of Technology www.gatech.edu	Portland State University www.pdx.edu	University of Kentucky www.uky.edu
Gonzaga University www.gonzaga.edu	Purdue University www.purdue.edu	University of Missouri Rolla www.umr.edu
Hofstra University www.hofstra.edu	Rose Hulman Institute of Technology www.rose-hulman.edu	University of Nevada Las Vegas www.unlv.edu
Illinois Institute of Technology www.iit.edu	Santa Clara University www.scu.edu	University of New Orleans Lakefront www.uno.edu
Iowa State University www.iastate.edu	St. Martin's College www.stmartin.edu	University of North Carolina Charlotte www.uncc.edu
Michigan Tech University www.mtu.edu	Syracuse University www.syr.edu	University of Texas Austin www.utexas.edu
Milwaukee School of Engineering www.msoc.edu	Texas A & M University Kingsville www.tamuk.edu	University of Utah www.utah.edu
Montana State University Bozeman www.montana.edu	University at Buffalo (SUNY) www.buffalo.edu	University of Washington www.washington.edu
New Jersey Institute of Technology www.njit.edu	University of Akron www.uakron.edu	University of Wyoming www.uwyo.edu
New Mexico State University www.nmsu.edu	University of Alabama Birmingham www.main.uab.edu	Virginia Polytechnic Institute State University www.vt.edu
North Carolina A&T State University www.ncat.edu	University of Arkansas www.uark.edu	

The 2006 Education Survey Results by School

The following list of schools DO NOT have the full curriculum:

<p>Those schools missing part of the full curriculum are recognized as offering the course with a green box (■). A red diamond (◆) will appear where no courses are offered for that subject.</p> <p>Some of the schools did not respond to this latest survey, however the information from the previous survey is included. Please note the "Updated" column for the year the survey response.</p>			Analysis	Matrix Methods	Steel	Concrete	Timber	Masonry	Dynamic Behavior	Foundations / Soils	Technical Writing
School	Website	Updated									
Arkansas State University	www.astate.edu	2001					◆	◆			◆
Blue Mountain Community College	www.bmcc.cc.or.us	2006		◆				◆	◆		
Broome Community College	www.sunybroome.edu	2001	◆	◆			◆	◆	◆	◆	◆
Bucknell University	www.bucknell.edu	2006			◆			◆	◆		
California State University - Fresno	www.csufresno.edu	2001						◆	◆		
California State University - Sacramento	www.csu.edu	2001									◆
Christian Brothers University	www.cbu.edu/	2001						◆			
The Citadel	www.citadel.edu	2006		◆			◆	◆			◆
Clarkson University	www.clarkson.edu	2001						◆		◆	
Cornell University	www.cornell.edu	2001						◆		◆	
Drexel University	www.drexel.edu	2001					◆				
Fairleigh-Dickinson University	www.fdu.edu	2001		◆				◆			
Florida Institute of Technology	www.fit.edu	2006				◆		◆			
Gonzaga University	www.gonzaga.edu/	2006			◆	◆					
Howard University	www.howard.edu	2006					◆	◆	◆		
Lawrence Technological University	www.ltu.edu	2006					◆				
Loyola Marymount University	www.lmu.edu	2001		◆			◆	◆			
Massachusetts Institute of Technology	web.mit.edu	2001					◆	◆			
Mercer County Community College	www.mccc.edu	2006		◆			◆	◆	◆	◆	
Miami University	www.miami.edu	2006	◆	◆				◆	◆	◆	◆
Missouri Western State University	www.missouriwestern.edu	2006								◆	◆
Michigan State University	www.msu.edu	2006					◆	◆			
Morgan State University	www.morgan.edu	2001					◆	◆			◆
Northeastern University	www.northeastern.edu	2006					◆	◆			
Ohio Northern University	www.onu.edu	2006						◆	◆		
Ohio State University	www.osu.edu	2006					◆	◆	◆		
Oregon Institute of Technology	www.oit.edu	2001		◆							
Prairie View A&M University	www.pvamu.edu	2001		◆			◆	◆	◆		
Rochester Institute of Technology	www.rit.edu	2006		◆				◆			
San Francisco State University	www.sfsu.edu	2006		◆				◆			
San Diego State University	www.sdsu.edu	2006						◆			
Seattle University	www.seattleu.edu	2001					◆	◆	◆		
Southern Illinois University	www.siu.edu	2001					◆				
Southern Methodist University	www.smu.edu	2006					◆	◆			
Southern Polytechnic State University	www.spsu.edu	2001					◆	◆	◆		
Stevens Institute of Technology	www.stevens.edu	2006	◆				◆	◆			
Texas A&M - College Station	www.tamu.edu	2006	◆				◆	◆			
Texas Tech	www.ttu.edu	2001	◆					◆			
Tri-State University	www.tristate.edu	2006		◆				◆	◆		
Tufts University	www.tufts.edu	2001					◆		◆		
U.S. Coast Guard Academy	www.cga.edu	2001					◆	◆			
University of California - Berkeley	www.berkeley.edu	2001						◆			
University of California - Los Angeles	www.ucla.edu	2001					◆				
University of California - San Diego	www.ucsd.edu	2001									◆
University of Central Florida	www.ucf.edu	2001									◆
University of Columbia	www.columbia.edu	2001					◆	◆			◆
University of Evansville	www.evansville.edu	2001						◆			◆
University of Hartford	www.hartford.edu	2001		◆				◆	◆		◆
University of Hawaii - Manoa	www.uhm.hawaii.edu	2006					◆	◆			◆
University of Houston	www.uh.edu	2006					◆				
University of Illinois - Chicago	www.uic.edu	2001									◆
University of Iowa	www.uiowa.edu	2001		◆			◆	◆			
University of Massachusetts - Amherst	umass.edu	2001						◆			
University of Massachusetts - Lowell	www.uml.edu	2001		◆				◆			

Additional detail on classes by subject and by school, can be found in the Education Section on the STRUCTURE® magazine website, www.STRUCTUREmag.org



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School	Website	Updated	Analysis	Matrix Methods	Steel	Concrete	Timber	Masonry	Dynamic Behavior	Foundations / Soils	Technical Writing
University of Memphis	www.memphis.edu	2006	■	■	■	■	◆	◆	■	■	■
University of Michigan	www.umich.edu	2006	■	■	■	■	◆	■	■	■	■
University of Minnesota	www1.umn.edu	2001	■	■	■	■	◆	■	■	■	■
University of Mississippi	www.olemiss.edu	2001	■	◆	■	■	◆	◆	■	■	◆
University of Nebraska - Lincoln	www.unl.edu	2001	■	■	■	■	◆	■	■	■	■
University of New Hampshire	www.unh.edu	2006	■	■	■	■	■	■	■	■	■
University of New Mexico	www.unm.edu	2006	■	◆	■	■	◆	◆	■	■	■
University of the Pacific	www.pacific.edu	2001	■	■	■	■	■	◆	■	■	■
University of Rhode Island	www.uri.edu	2001	■	■	■	■	■	◆	■	■	■
University of South Carolina	www.sc.edu	2001	■	■	■	■	◆	◆	■	■	◆
University of Tennessee - Knoxville	www.utk.edu	2006	■	◆	■	■	■	■	■	■	■
University of Tennessee - Martin	www.utm.edu	2006	■	■	■	■	■	◆	■	■	■
University of Texas - El Paso	www.utep.edu	2001	■	■	■	■	◆	◆	■	■	◆
University of Wisconsin - Madison	www.wisc.edu	2006	■	■	■	■	■	◆	■	■	■
University of Wisconsin - Platteville	www.uwplatt.edu	2006	■	■	■	■	◆	◆	◆	■	■
Valparaiso University	www.valpo.edu	2001	■	■	■	■	◆	■	■	■	■
Villanova University	www.villanova.edu	2001	■	■	■	■	■	■	■	■	◆
Virginia Military Institute	www.vmi.edu	2006	■	■	■	■	■	◆	◆	■	■
Washington University in St Louis	www.wustl.edu	2006	◆	■	■	■	■	■	■	■	■
Western Kentucky University	www.wku.edu	2006	■	■	■	■	◆	◆	■	■	◆
Worcester Polytechnic Institute	www.wpi.edu	2006	■	■	■	■	■	◆	■	■	■

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The 2006 Education Survey Results – Number of Classes Offered

This table denotes how many classes each school offers for each subject of the recommended curriculum.

School	Recommended Curriculum																										
	Analysis			Matrix Methods			Steel Design			Concrete Design			Timber Design			Masonry Design			Dynamic			Foundation - Soils			Technical Writing		
	2 Courses Recommended			1 Course Recommended			2 Courses Recommended			2 Courses Recommended			1 Course Recommended			1 Course Recommended			1 Course Recommended			1 Course Recommended					
<i>The following is the list of schools which responded to the latest survey. A "+ #" would signify that the school requires that number of additional class at the Masters level, or offers that number of additional class as an elective. Schools which are in bold type have the complete recommended curriculum.</i>	Required for a Bachelor Degree	Required for a Masters Degree	Offered as an Elective	Required for a Bachelor Degree	Required for a Masters Degree	Offered as an Elective	Required for a Bachelor Degree	Required for a Masters Degree	Offered as an Elective	Required for a Bachelor Degree	Required for a Masters Degree	Offered as an Elective	Required for a Bachelor Degree	Required for a Masters Degree	Offered as an Elective	Required for a Bachelor Degree	Required for a Masters Degree	Offered as an Elective	Required for a Bachelor Degree	Required for a Masters Degree	Offered as an Elective	Required for a Bachelor Degree	Required for a Masters Degree	Offered as an Elective			
	Auburn University	3					1	2	3		1		+2			1			1	1		+2	1		+2		
Blue Mountain Community College	<i>Unchanged program from 2004-2005 survey</i>																										
Bucknell University			2			1			1			1			1	<i>None offered</i>			<i>None offered</i>					1			1
California Polytechnic Univ. - S.L.O.	<i>Unchanged program from 2004-2005 survey</i>																										
Clemson University	<i>Unchanged program from 2004-2005 survey</i>																										
Florida Institute of Technology	2				1	+1	1	2		1			1			<i>None offered</i>				1		1	1		1		
Georgia Institute of Technology	1	+1				1		1	+1		1	+3			1			1			2			4			1
Gonzaga University	1		+1			1	1			1					1			1			1	2			1		1
Hofstra University	<i>Unchanged program from 2004-2005 survey</i>																										
Howard University	1	+1				1	1	+1	+1	1	+1		<i>None offered</i>			<i>None offered</i>			<i>None offered</i>			2	+1			1	
Illinois Institute of Technology	2					1	2			2		+1			1			1			2	1				2	
Lawrence Technological University	<i>Unchanged program from 2004-2005 survey</i>																										
Miami University	1			<i>None offered</i>				1			1			1		<i>None offered</i>			<i>None offered</i>			<i>None offered</i>			<i>None offered</i>		
Michigan State University	1		+1			2			2			2	<i>None offered</i>			<i>None offered</i>					1					1	
Michigan Technological University	1	+1			1	+1	0.5		+2	0.5		+3			1.5			.5		1	+1	1		+2			1
Milwaukee School of Engineering	<i>Unchanged program from 2004-2005 survey</i>																										
Missouri Western State University	1			<i>None offered</i>			1			1			0.5			0.5			<i>None offered</i>			1				1	
Montana State University	2					1	1	+2		2	+1				1			1			1	2	+1			1	
New Mexico State University	3		+1		1		1	+1		1	+1				1			1		1		1			1		1

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This table denotes how many classes each school offers for each subject of the recommended curriculum.



School	Recommended Curriculum																										
	Analysis			Matrix Methods			Steel Design			Concrete Design			Timber Design			Masonry Design			Dynamic			Foundation - Soils			Technical Writing		
	2 Courses Recommended			1 Course Recommended			2 Courses Recommended			2 Courses Recommended			1 Course Recommended			1 Course Recommended			1 Course Recommended			1 Course Recommended					
<p><i>The following is the list of schools which responded to the latest survey.</i></p> <p><i>A "+ #" would signify that the school requires that number of additional class at the Masters level, or offers that number of additional class as an elective.</i></p> <p><i>Schools which are in bold type have the complete recommended curriculum.</i></p>	Required for a Bachelor Degree	Required for a Masters Degree	Offered as an Elective	Required for a Bachelor Degree	Required for a Masters Degree	Offered as an Elective	Required for a Bachelor Degree	Required for a Masters Degree	Offered as an Elective	Required for a Bachelor Degree	Required for a Masters Degree	Offered as an Elective	Required for a Bachelor Degree	Required for a Masters Degree	Offered as an Elective	Required for a Bachelor Degree	Required for a Masters Degree	Offered as an Elective	Required for a Bachelor Degree	Required for a Masters Degree	Offered as an Elective	Required for a Bachelor Degree	Required for a Masters Degree	Offered as an Elective			
	Northeastern University	2					1			2	1		+2	<i>None offered</i>			<i>None offered</i>				1	+1	1		+3	1	
North Carolina State University		1	+3		2	+2			3			4			1			1		1	+2			9			1
Ohio Northern University	<i>Unchanged program from 2004-2005 survey</i>																										
Ohio State University	1		+1			1			3	1		+3	<i>None offered</i>			<i>None offered</i>					1	1		+1	1		
Ohio University	1			1			1			1			1			1			1			1			1		
Oklahoma State University - Arch Eng	2			1	+1		2	+1		2	+1		1			1	1		1			2				1	
Oklahoma State University - Civil Eng	1		+6		1		1	+1		1	+2				1			1			1	1	+2		1		
Oregon State University	2				1		1	+1		1	+1		1			1			2			2		+1	2		
Purdue University	3		+3	1		+2	1		+3	1		+3			1			1	1		+3	2		+3	1		
Portland State University	2	+3				1	1		+2	1		+3			1			1			3	2		+3	1		
Rochester Institute of Technology	2			<i>None offered</i>			1.5			1.5					1	<i>None offered</i>			1			1			1		
Rose Hulman Institute of Technology	2		+2			2	1		+2	1		+2			2			1	1		+1	1		+2	2		
San Francisco State University	2								2	1		+2	1			<i>None offered</i>					1	1	+1		1		
South Dakota State University	1		+1			1	1	+1		1	+1				1	<i>None offered</i>				1		1		2	1		
Santa Clara University	<i>Unchanged program from 2004-2005 survey</i>																										
Southern Methodist University	3				1		0.5	+1		0.5	+2		<i>None offered</i>			<i>None offered</i>			1		+2	1		+2	1		
Stevens Institute of Technology	2		+1	1		+1	2		+1	1		+2	<i>None offered</i>			<i>None offered</i>					3	1		+2	2		
Syracuse University	1	+1	+2		1	+1		1	+1	1	+1	+2			1			1			1	+2	2	+2	1		
Texas A&M University - College Station	3		+2			1	1		+2	1		+2	<i>None offered</i>			<i>None offered</i>			1	+1	+3	1		+8	1		



The 2006 Education Survey Results – Number of Classes Offered

This table denotes how many classes each school offers for each subject of the recommended curriculum.

School	Recommended Curriculum																											
	Analysis			Matrix Methods			Steel Design			Concrete Design			Timber Design			Masonry Design			Dynamic			Foundation - Soils			Technical Writing			
	2 Courses Recommended			1 Course Recommended			2 Courses Recommended			2 Courses Recommended			1 Course Recommended			1 Course Recommended			1 Course Recommended			1 Course Recommended						
<p>The following is the list of schools which responded to the latest survey.</p> <p>A “+ #” would signify that the school requires that number of additional class at the Masters level, or offers that number of additional class as an elective.</p> <p>Schools which are in bold type have the complete recommended curriculum.</p>	Required for a Bachelor Degree	Required for a Masters Degree	Offered as an Elective	Required for a Bachelor Degree	Required for a Masters Degree	Offered as an Elective	Required for a Bachelor Degree	Required for a Masters Degree	Offered as an Elective	Required for a Bachelor Degree	Required for a Masters Degree	Offered as an Elective	Required for a Bachelor Degree	Required for a Masters Degree	Offered as an Elective	Required for a Bachelor Degree	Required for a Masters Degree	Offered as an Elective	Required for a Bachelor Degree	Required for a Masters Degree	Offered as an Elective	Required for a Bachelor Degree	Required for a Masters Degree	Offered as an Elective	Required for a Bachelor Degree	Required for a Masters Degree	Offered as an Elective	
	Texas A&M University - Kingsville	3			1	+1		1	+1		1	+2				1			1	1	+1		2			1		
	The Citadel	<i>Unchanged program from 2004-2005 survey</i>																										
Tri-State University	<i>Unchanged program from 2004-2005 survey</i>																											
University at Buffalo (SUNY)	2	+1			2		1	+1		1	+1			1			1		2	+2	1	+1		1				
University of Alabama - Birmingham	1		+1			1	1		+1	1		+1		1			1			1			1	1				
University of Arkansas	2					1	1	+1		1	+4			1			1			1	2			1				
University of California - San Diego	2					1	1	+1		2	+1			1			1			2			2	<i>None offered</i>				
University of Cincinnati	3			1	+1		1.5	+2	+1	1.5	+2	+1			1			1	1	+1	+1	2		+2	1			
University of Evansville	1					1	1			1				1	<i>None offered</i>					1	1			<i>None offered</i>				
University of Florida	1	+1		1		+1	1	+1	+3	1	+1	+3		1			1			1			+5	1				
University of Hawaii - Manoa	2					2			2			2	<i>None offered</i>			<i>None offered</i>					2	2			<i>None offered</i>			
University of Houston	2		+2			1			2	1		+3	<i>None offered</i>					1	1		+2	2		+2	1			
University of Illinois - Urbana	<i>Unchanged program from 2004-2005 survey</i>																											
University of Kansas	1	+1			1		1		+2	1		+3			1			1			3	1		+2	1			
University of Kentucky	3	+1	+1	1		+1	1	+1		1	+1	+2			1			1			1	2		+1			1	
University of Memphis	<i>Unchanged program from 2004-2005 survey</i>																											
University of Michigan	1		+1	1			1		+1	1		+2	<i>None offered</i>					1			2	1		+1	1			
University of Missouri - Rolla			2			1			3			3			1			1			1		2				1	

The 2006 Education Survey Results – Number of Classes Offered

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	Analysis			Matrix Methods			Steel Design			Concrete Design			Timber Design			Masonry Design			Dynamic			Foundation - Soils			Technical Writing			
	2 Courses Recommended			1 Course Recommended			2 Courses Recommended			2 Courses Recommended			1 Course Recommended			1 Course Recommended			1 Course Recommended			1 Course Recommended						
<p><i>The following is the list of schools which responded to the latest survey.</i></p> <p><i>A “+ #” would signify that the school requires that number of additional class at the Masters level, or offers that number of additional class as an elective.</i></p> <p><i>Schools which are in bold type have the complete recommended curriculum.</i></p>	Required for a Bachelor Degree	Required for a Masters Degree	Offered as an Elective	Required for a Bachelor Degree	Required for a Masters Degree	Offered as an Elective	Required for a Bachelor Degree	Required for a Masters Degree	Offered as an Elective	Required for a Bachelor Degree	Required for a Masters Degree	Offered as an Elective	Required for a Bachelor Degree	Required for a Masters Degree	Offered as an Elective	Required for a Bachelor Degree	Required for a Masters Degree	Offered as an Elective	Required for a Bachelor Degree	Required for a Masters Degree	Offered as an Elective	Required for a Bachelor Degree	Required for a Masters Degree	Offered as an Elective	Required for a Bachelor Degree	Required for a Masters Degree	Offered as an Elective	
	University of New Hampshire	2	+1	+1			1			1	1					1			1			2	2			1		
	University of New Mexico			1	<i>None offered</i>					1			1	<i>None offered</i>			<i>None offered</i>					1			1			1
University of North Carolina - Charlotte	<i>Unchanged program from 2004-2005 survey</i>																											
University of Tennessee - Knoxville	2	+2	+1	<i>None offered</i>			0.5	0.5	+2	0.5	0.5	+3			1			1			1	1	+1	+3			1	
University of Tennessee - Martin	2					1			1	1					1	<i>None offered</i>					1	1					1	
University of Utah	2	+2				1	2		+1	1		+1			1			1	1		+3	1		+5	1			
University of Washington	<i>Unchanged program from 2004-2005 survey</i>																											
University of Wisconsin - Madison	2				1	+1		1	+1		1	+2		1		<i>None offered</i>					2	1		+1	1			
University of Wisconsin - Platteville			1			1			1			1	<i>None offered</i>			<i>None offered</i>			<i>None offered</i>						1			1
University of Wyoming	<i>Unchanged program from 2004-2005 survey</i>																											
Virginia Military Institute	1		+1			1			1	1		+1		0.5	<i>None offered</i>			<i>None offered</i>			1		+1				1	
Washington University in St Louis	<i>None offered</i>					1	1		+2	1		+2			1			1			2	1		+1	1			
Western Kentucky University	2		2			1			1			1	<i>None offered</i>			<i>None offered</i>					1	1		+1	<i>None offered</i>			
Worcester Polytechnic Institute			4			2			2			2			1	<i>None offered</i>					2			2	2		3	