

CIVE 200 : Introduction to CEE

Sept. 12, 2013

Faculty Members	CEE Curriculum	Course Information	Deliverables	Careers in CEE
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CEE Disciplines

<u>Disciplines</u>	CEE Curriculum	Course Information	Deliverables	Careers in CEE
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- Construction Management
- Environmental
- Geotechnical
- Materials & Pavements
- Structures
- Transportation & Planning
- Water Resources and Hydraulics

CEE				
Faculty Members	CEE Curriculum	Course Information	Deliverables	Careers in CEE
<p>Full Time Faculty</p> <ul style="list-style-type: none"> Makram Suidan Mutasem El-Fadel Salah Sadek Habib Basha George Ayoub Bilal Hamad Mohamad Harajli Isam Kaysi Mounir Mabsout Ghassan Chehab Shadi Najjar Majdi Abou Najm Maya Abou Zeid Ibrahim Alammedine Farook Hamzeh Elie Hantouche Hiam Khoury George Saad Darine Salam 		<p>Part Time Faculty</p> <ul style="list-style-type: none"> Kamal Azar Hisham Basha Amer El Souri Youssef Fawaz Constantine Inglessis Adnan Masri Halim Nader Khaldoun Nasreddine Salah El-Dinn Sadek 		<p>Staff</p> <ul style="list-style-type: none"> Helmi El-Khatib Bashir Asyala Jamil Bashir Christiane Chedid Joseph Daoud Zakeya Deeb Khaled Hallak Abdel Rahman EISheik

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Full Time Faculty

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Mutasem El-Fadel
Salah Sadek
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George Ayoub
Bilal Hamad
Mohamad Harajli
Isam Kaysi
Mounir Mabsout
Ghassan Chehab
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Maya Abou Zeid
Ibrahim Alammedine
Farook Hamzeh
Elie Hantouche
Hiam Khoury
George Saad
Darine Salam



*Professor & Chairperson
Stanford University
Environmental and Water*

- » Strategic & environmental impact assessment
- » Water resources and quality management
- » Air quality, waste management & landfill design
- » GHG emissions and climate change

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Hiam Khoury
George Saad
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*Professor
University of California, Berkeley
Geotechnical*

- » Electrical properties of clays
- » Properties of solid waste fills and their evaluation
- » Alternative landfill cover systems
- » Seismic design of dams

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<ul style="list-style-type: none"> » Analytical and numerical models for infiltration » Modeling groundwater flow » Solute transport in water networks » Rainfall-runoff 				

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<ul style="list-style-type: none"> » Water and wastewater treatment processes » Physico-chemical and biological treatment processes » Industrial waste treatment » Low cost methods and materials in water and wastewater treatment 				

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*Professor
University of Texas at Austin
Structures*

- » Design and behavior of reinforced concrete structures
- » Bond and development of reinforcement
- » Repair and strengthening of reinforced concrete structures
- » Concrete technology

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Hiam Khoury
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*Professor
University of Michigan, Ann Arbor
Structures*

- » Design and behavior of reinforced, pre-stressed, and fiber reinforced concrete under static and seismic loads
- » Repair and rehabilitation of concrete structures using advanced composites.

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Professor

Massachusetts Institute of Technology

Transportation & Planning

- » Maritime transport and port operations
- » Advanced technology applications in transport
- » National and regional transportation planning
- » Public transport systems

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Professor

University of Texas at Austin


Structures

- » Structural mechanics
- » Finite element analysis
- » Soil-structure interaction

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Faculty Members	CEE Curriculum	Course Topics & Schedule	Deliverables	Careers in CEE
Full Time Faculty				
<ul style="list-style-type: none"> Makram Suidan Mutasem El-Fadel Salah Sadek Habib Basha George Ayoub Bilal Hamad Mohamad Harajli Isam Kaysi Mounir Mabsout Ghassan Chehab Shadi Najjar Majdi Abou Najm Maya Abou Zeid Ibrahim Alammedine Farook Hamzeh Elie Hantouche Hiam Khoury George Saad Darine Salam 			<p><i>Assistant Professor</i> <i>Duke University</i> <i>Environmental</i></p> <ul style="list-style-type: none"> » Environmental systems analysis » GIS and remote sensing » Optimization of environmental monitoring » Environmental modeling of riverine and coastal systems, lakes/reservoirs 	

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Hiam Khoury
George Saad
Darine Salam



*Assistant Professor
University of Cincinnati
Structures*

- » Behavior of steel framed structures: experimentation, numerical modeling, and development of simplified approaches for the simulation
- » Linear/nonlinear finite element application
- » Rehabilitation of structures.

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Ibrahim Alammedine
Farook Hamzeh
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Hiam Khoury
George Saad
Darine Salam



*Assistant Professor
University of Michigan, Ann Arbor
Construction Management*

- » Encompass applications of IT tools in construction engineering and project management
- » Deployment of sensing/positioning technologies and use of building information models for information retrieval and visualization on construction sites

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<ul style="list-style-type: none"> Makram Suidan Mutasem El-Fadel Salah Sadek Habib Basha George Ayoub Bilal Hamad Mohamad Harajli Isam Kaysi Mounir Mabsout Ghassan Chehab Shadi Najjar Majdi Abou Najm Maya Abou Zeid Ibrahim Alammedine Farook Hamzeh Elie Hantouche Hiam Khoury George Saad Darine Salam 	<p style="margin: 0;"><i>Assistant Professor</i> <i>University of Cincinnati</i> <i>Environmental</i></p>		<ul style="list-style-type: none"> » Environmental chemistry and microbiology » Biotechnology applications to environmental quality evaluation, monitoring, and remediation of contaminated sites » Bioremediation of oil spills » Toxicity testing 	

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- BE Program (4 Years including 3 Summers)
- 143 Credits
- Distributed amongst:
 - ✓ Math and basic Sciences
 - ✓ Engineering
 - ✓ English, Arabic, Humanities & Social Sciences
 - ✓ Summer Training, Final Year Project

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Sequence	Course	Title	Cr.
Structures	CIVE 200	Intro. to Engineering	2
Construction	Math 201	Calculus & Analyt. Geo	3
Materials	Phys 210	Introductory Physics	3
Geotechnical	Phys 210L	Intro. Physics Lab	1
Transportation	Arab 2nn	Arabic Elective	3
Environmental	Hum 2nn	Humanities Elective	3
Water Resources			
Other CIVE			

Term I				Term II			
Course	Title	Cr.	Total	Course	Title	Cr.	Total
CIVE 200	Intro. to Engineering	2	2	CIVE 210	Statics	3	3
Math 201	Calculus & Analyt. Geo	3	5	CIVE 220A	Eng. Drawings & Tools	3	6
Phys 210	Introductory Physics	3	8	Math 202	Differential Equations	3	9
Phys 210L	Intro. Physics Lab	1	9	Chem 202	Environ. Chemistry ¹	3	12
Arab 2nn	Arabic Elective	3	12	Chem 203	Intro. Chem. Tech	2	14
Hum 2nn	Humanities Elective	3	15	ENGL 2nn	English Elective	3	17
			Total = 15				Total = 17
			Cum. = 15				Cum. = 32

Term III				Term IV				Term V			
Course	Title	Cr.	Total	Course	Title	Cr.	Total	Course	Title	Cr.	Total
CIVE 360	Surveying	2	17	CIVE 310	Mechanics of Materials	3	18	CIVE 410	Theory of Structures	3	21
STA 230	Intro. to Probability	3	20	CIVE 320	Constr. Mater. & Tech	3	21	CIVE 431	Soil Mech & Lab	3	24
GEOL 2nn	Geology Elective ²	3	23	Hum 2nn	Humanities Elective	3	24	CIVE 340	Fluid Mech & Lab	3	27
			Total = 8	EECE 230	Intro. Prog + Matlab	3	27	EECE 210	Circuits & Electronics	3	30
			Cum. = 40	Math 2nn	Math Elective ³	3	30	Math 251	Numerical Computing	3	33
				BIOL 2nn	Biology Elective ⁴	3	33	ENGL 206	Technical English	3	36
							Total = 18				Total = 18
							Cum. = 58				Cum. = 76

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Term VI			Term VII			Term VIII		
Course	Title	Cr.	Course	Title	Cr.	Course	Title	Cr.
EMG 400	Engineering Economy	3	CIVE 420	Concrete Design	3	CIVE 5nn	Structures Elective	3
SSCI 2nn	Social Sciences Elect.	3	CIVE 440	Hydraulics & Lab	3	CIVE 580	Construction Mgmt.	3
EMG 504	Engineering Ethics ³	3	CIVE 450	Water/Wastewater Tr.	3	CIVE 54n	Hydrology Elective	3
or Hum 2nn	Humanities Elective	3	CIVE 460	Highway Eng.	3	CIVE 55n	Environ. Elective	3
			CIVE 530	Foundation Eng.	3	CIVE 461	Transport. Eng & Lab	3
Total = 9			Total = 15			Total = 15		
Cum. = 85			Cum. = 100			Cum. = 115		

Term IX			Term X			Term XI		
Course	Title	Cr.	Course	Title	Cr.	Course	Title	Cr.
CIVE 500	Approved Experience	0	CIVE 501	Final Year Project I	1	CIVE 502	Final Year Project II	3
			CIVE 6nn	Tech. Elective	3	CIVE 6nn	Tech. Elective	3
			CIVE 6nn	Tech. Elective	3	CIVE 6nn	Tech. Elective	3
			CIVE 6nn	Tech. Elective	3	CIVE 6nn	Tech. Elective	3
			SSCI 2nn	Social Sciences Elect.	3			
			EMG 504	Engineering Ethics ³	3			
			or Hum 2nn	Humanities Elective	3			
Total = 0			Total = 16			Total = 12		
Cum. = 115			Cum. = 131			Cum. = 143		

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Yr Course	Title	Co-requisite	Pre-req. 1	Pre-req. 2	Pre-req. 3	Pre-req. 4	Pre-req. 5	Pre-req. 6
1 CIVE 200	Introduction to Engineering	CIVE Standing						
1 CIVE 210	Statics	Math 201						
1 CIVE 220A	Engg Drawings and Tools	CIVE Standing	CIVE 200					
2 CIVE 360	Surveying		CIVE 200	CIVE 210	CIVE 220A			
2 CIVE 310	Mechanics of Materials	Math 202	CIVE 200	CIVE 210	CIVE 220A	Phys. 210	Phys 210L	STAT 230
2 CIVE 320	Construction Materials & Technology	CIVE 310	CIVE 200	CIVE 210	CIVE 220A	Chem 202	Chem 203	STAT 230
2 CIVE 340	Fluid Mechanics and Laboratory	Math 202	CIVE 210	PHYS 210	PHYS 210L	MATH 201	STAT 230	
2 CIVE 410	Theory of Structures		CIVE 310	CIVE 320				
2 CIVE 430	Engineering Geology		CIVE 200	CIVE 210	CIVE 220A			
2 CIVE 431	Soil Mechanics and Laboratory	Biol 2nn	CIVE 310					
3 CIVE 420	Concrete Design		CIVE 410	EECE 210	EECE 230	Math 2nn	MATH 251	
3 CIVE 440	Hydraulics and Laboratory	3rd year	CIVE 340	ENGL 206	Math 2nn	MATH 251		
3 CIVE 450	Water & Wastewater Treatment & Lab		CIVE 340	CHEM 202	CHEM 203	Biol 2nn		
3 CIVE 460	Highway Engineering		CIVE 360	CIVE 410	EECE 210	EECE 230		
3 CIVE 461	Transportation Engineering & Laboratory	CIVE 460		ENGL 206				
4 CIVE 500	Approved Experience		CIVE 420	CIVE 431	CIVE 440	CIVE 461	ENGL 206	
4 CIVE 501	Final Year Project I	EMG 504	CIVE 500	ENMG 400				
4 CIVE 502	Final Year Project II		CIVE 501					
4 CIVE 530	Foundation Engineering	CIVE 420	CIVE 431	CIVE 410				
4 CIVE 54n	Hydrology Elective		CIVE 440	CIVE 450	Chem 202	Chem 203		
4 CIVE 55n	Environ. Elective		CIVE 440	CIVE 450	Chem 202	Chem 203	Bio 2nn	
4 CIVE 580	Construction Management	ENMG 400	CIVE 420	CIVE 530				
4 CIVE 5nn	Structures Elective		CIVE 420					

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- Each Student has 1 Full-Time Faculty Advisor
- Any student can check his/her assigned advisor on the AUB-SIS
 - For this initial advising phase you may be assigned a "temp" advisor until your advisor is back from travel
- The role of the Advisor is to assist you with:
 - Registration
 - Course selection
 - End-of Semester evaluation
 - Any other academic issue
- Your Advisor is a valuable resource. Consult with him/her if you have any problem. He/She will direct you to where you could get the answers / help you need, or assist you directly.
- Appendix on FAQ (Frequently Asked Questions)
- The *Ultimate Responsibility is YOURS*

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- Different System from any you have experienced so far!
- Numbers to Remember:
 - ✓ 1st evaluation (after the 1st + 2nd semester): >68
 - ✓ Evaluation based on every regular semester after that. (Summers are counted with next regular semester)
 - ✓ 3rd and 4th Semesters: >69
 - ✓ Any semester after that : >70
- Other points to Remember:
 - ✓ The Passing Grade in any Course is 60
 - ✓ Failed Courses have to be repeated at first available opportunity before you can take a higher course

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- Any evaluation period you fall below the target average (indicated earlier) you are placed on **PROBATION**
- Probation is removed with a “successful” performance in the following evaluation period (>target avg.)
- Probation should be removed within two regular semesters.
- Dean’s Honor List:
 - ✓ Full time status (12 Credits or more)
 - ✓ Avg. in any evaluation Period >85 or if >80 and in top 10% of your class.

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- DISMISSAL:
 - ✓ Overall average in first evaluation period <60
 - ✓ Fail to clear probation after 2 consecutive evaluation periods
 - ✓ If student placed on probation 4 regular semesters
- GRADUATION:
 - ✓ Minimum Cumulative Average in ALL courses: 70
 - ✓ Minimum Cumulative Average in Major courses: 70
 - ✓ If Average in ALL CIVE courses and last 60cr. Is 85 or more: *Distinction (Accelerated PhD if cumulative 85)*
 - ✓ If Average in ALL CIVE courses and last 60cr. Is 90 or more: *High Distinction (Accelerated PhD)*

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<p>Dual Majors, Minors</p> <p>Within FEA</p> <p>Throughout AUB</p> <p>Ask about it!</p> <p>TAKE ADVANTAGE!</p>				

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<ul style="list-style-type: none"> ➤ Lectures: Engineering Lecture Hall Thurs. 2:00-3:30PM ➤ Labs: Room 108 (<i>Or Computer Labs Or ELH</i>) Section 1 Mon. 3:30-7:00PM Section 2 Wed. 3:30-7:00PM ➔ Communication via moodle or email ← ➤ Coordinator Dr. Mutasem El Fadel 342B Bechtel mfadel@aub.edu.lb Office Hours: Tuesday 2-3 PM or by Appointment 				

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Graduate Assistants

- Dima Al Hassanieh- dza01@mail.aub.edu
- Anwar El-Chami- age08@mail.aub.edu
- Hussein Kassem- hak35@mail.aub.edu

UG Assistants

- Omar El Khatib
- Elias Haber
- Rayane Mrad
- Jad Sabra

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Careers in
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Attendance (Mandatory)	10%
Paper & Presentation	20%
Bridge Competition	20%
Hydraulic Competition	15%
Concrete Competition	15%
Final Exam	20%

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- CEE Disciplines (various faculty members)
- Instrumentation in CEE
- BIM (Revit)
- Contemporary challenge, case histories/movies
- Ethics in Engineering

Week	LAB Activities (M/W)	Week	Holiday	Lecture (Th)	Deliverable
Sep 4	No Lab	Sep 5	-	Logistics	
Sep 9, 11	Lab visits	Sep 12	-	Overview of CEE	
Sep 16, 18	Library Resources	Sep 19	-	Structures	
Sep 23, 25	Bridge Game	Sep 26	-	Construction	
Sep 30, Oct 2	Bridge Building Competition – 1	Oct 3	-	Water	
Oct 7, 9	Bridge Building Competition – 2	Oct 10	-	Geotechnical	
Oct 16	No CLASS	Oct 17	AL ADHA	No CLASS	
Oct 21, 23	BRIDGE COMPETITION-FINAL	Oct 24	-	Transportation	Bridge Test
Oct 28, 30	Hydraulic Competition – 1	Oct 31		Environmental	
Nov 6	Hydraulic Competition – 2 (Both sections)	Nov 7		Materials	
Nov 11	HYDRAULIC COMPETITION – FINAL (Both Sections)	Nov 14	-	Instrumentation & Monitoring in CEE applications	Hydraulic Test
Nov 4/Nov 13	No Class		Hijra New Year /Ashoura Holiday		
Nov 18, 20	Concrete Competition – 1	Nov 21		BIM / Revit	Paper Due
Nov 25, 27	Concrete Competition FINAL	Nov 28	-	Contemporary Challenge	Concrete Testing
Dec 2, 4	Presentations of Literature Projects	Dec 5	-	Engineering Ethics	Concrete Report+ Presentation

Course Outcomes

Faculty Members	CEE Curriculum	Course Information	Deliverables	Careers in CEE
<ul style="list-style-type: none">➤ Students can demonstrate a basic understanding of the CEE profession in its various disciplines➤ Students can demonstrate the ability to understand, interpret and solve CEE experiments and problems.➤ Students will be able to think creatively and to apply basic research skills.➤ Students will appreciate the impact of engineering solutions in local and global context through lectures and projects.➤ Students will develop their teamwork, organizational and presentation skills with a professional attitude				

Bridge Competition

Faculty Members	CEE Curriculum	Course Information	Deliverables	Careers in CEE
 A photograph showing a group of students in a workshop or classroom setting. They are focused on constructing a model of a truss bridge using wooden sticks and glue. The bridge is supported by a wooden base. In the background, other students are visible, some wearing shirts with 'NORTH CAROLINA STATE UNIVERSITY' and 'S.M.A.K.V.G. U.S.A.' printed on them. The scene is brightly lit, and the students appear to be in the middle of a hands-on learning activity.				

Hydraulic Arm Competition

Faculty
Members

CEE
Curriculum

Course
Information

Deliverables

Careers in
CEE



Concrete Competition

Faculty
Members

CEE
Curriculum

Course
Information

Deliverables

Careers in
CEE



Paper & Presentation

Faculty Members

CEE Curriculum

Course Information

Deliverables

Careers in CEE

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Dam safety management for sustainable farming businesses and catchments

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ABSTRACT

In most countries, water responsibility exists under Common Law to manage and maintain dams avoiding to cause hazards. However, dam safety in Australia is being tested and the accountability of farming businesses compromised because of the potential and severe consequences of dam failure. This paper explores management and policy issues associated with safety of dam water storage and release. Through a synthesis of developments in the Australian catchment agriculture environmental benchmarks, financial review and a longitudinal study over a 12-year period provides the basis for case analysis and discussion of the implications of the benchmarks model policy selection processes. Research results show South Australia is lagging international best practice in a number of ways whilst Tasmania provides leadership. The contribution of this paper to a regulatory risk analysis approach, incorporated a cost-effective gateway safety engineering/management tool, developed and demonstrated through Australian case studies, that can be applied by any jurisdiction wanting to check and/or improve its dam safety management and provide a quality assurance analysis of the social and environmental costs and threats associated with air-bain dam safety issues.

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1. Introduction

Water resources management is essential for sustainable agriculture in a climate of water scarcity (Adel et al., 2007; Skulski and Zemski, 2008). Dams are the “lifeline” of most farming businesses as they provide stocks of essential water supply for irrigation and other farming activities (Lewis, 2002). There are at least 72,000 farm dams in Australia (Eaton, 2008) which demonstrate the reliance of Australian farming businesses on these structures. A problem exists with privately owned dam safety in that thousands of such structures have failed and many more show significant safety threats. The Australian National Committee on Large Dams (ANCLD) in 1992 estimated that 28% of farm dams in NSW failed (Pitanelli, 1997) and currently some 500 of the 8000 registered dams are very dangerous (Laird and Bond, 2006, 2003, 2002; and Harrison (2002) report that at least 10 significant failures have occurred in Victoria in the last decade. Most recently in South Australia, a 600Ml farm dam on Kangaroo Island burst following severe winds in July 2009 causing significant damage downstream to both private and public property (ABC News, 2009). Climate change has recently increased the likelihood of unusually heavy rains in Australia which is likely to become more frequent in areas of middle and high latitudes (DCC, 2007) hence dams not designed to handle such extreme flood events will fail more frequently. Dam failure for a farming business can mean no longer being able to water valuable crops, the subsequent loss of those crops, serious consequences to farming activities, substantial costs to repair or replace the dam, and possible liability to downstream consequences (Lewis, 2002). While there are many conflicting definitions of sustainability, the notion has been defined by authors as the goal of providing future generations the opportunity to generate the goods and services required to achieve their objectives (Vichitva and Ozer, 2006). Hence, management of a farm dam to maintain its performance, structural integrity and safety is vital not only for the sustainability of a farming business in the present, but also for future generations. In addition, sound management is also important for the safety and sustainability of the downstream community and environment. This study identifies the costs to business and the community associated with dam failure (Schlagel and Burritt, 2012). However, a major challenge to privately owned dam management is the lack of on-dam water management records, reports and assessment (Colledge and Raine, 2005) and often the most basic costs are even brought to light, such as, the focus on depth caused by dam failure.

Faculty Members

CEE Curriculum

Course Information

Deliverables

Careers in CEE

CEE Movie

CEE

Faculty Members	CEE Curriculum	Course Information	Deliverables	<u>Careers in CEE</u>
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P A T H S

in Civil Engineering

CEE

Faculty Members	CEE Curriculum	Course Information	Deliverables	<u>Careers in CEE</u>
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Government

